

PHYSICAL  
SCI. LIB.

TC

824

C2

A2

NO. 58

APPX. A



STATE OF CALIF.  
DEPARTMENT OF WATER RESOURCES  
DIVISION OF RESOURCES PLANNING

# FUTURE POPULATION, ECONOMIC AND RECREATION DEVELOPMENT OF CALIFORNIA'S NORTHEASTERN COUNTIES

## APPENDIX A OF BULLETIN NO. 58 NORTHEASTERN COUNTIES INVESTIGATION

GOODWIN J. KNIGHT  
Governor



HARVEY O. BANKS  
Director of Water Resources

JULY, 1957



STATE OF CALIFORNIA  
DEPARTMENT OF WATER RESOURCES  
DIVISION OF RESOURCES PLANNING

FUTURE POPULATION, ECONOMIC AND  
RECREATION DEVELOPMENT OF  
CALIFORNIA'S NORTHEASTERN  
COUNTIES

APPENDIX A  
OF  
BULLETIN NO. 58  
NORTHEASTERN COUNTIES  
INVESTIGATION

GOODWIN J. KNIGHT  
Governor



HARVEY O. BANKS  
Director of Water Resources

JULY, 1957



STATE OF CALIFORNIA  
DEPARTMENT OF WATER RESOURCES  
DIVISION OF RESOURCES PLANNING

## INTRODUCTORY STATEMENT

The Northeastern Counties Investigation was conducted by the State of California, Department of Water Resources, under legislative authorization which provided for the determination of the ultimate water needs of 15 northeastern California counties, predicated upon full development of all natural resources. To assist in the analysis of the expanding water needs of these counties that will inevitably result from population increases and the growth of industry and commerce, including recreation, the Department employed the firm of Harold F. Wise and Associates, consultants in planning and urban economics.

This appendix report, prepared by the firm of Harold F. Wise and Associates, sets forth the data and conclusions relating to ultimate population, economic development that might result from full use of the natural resources, and recreation potential which could be expected under ultimate conditions. These data are the basis for the Department's estimates of water requirements for urban, domestic, industrial, and recreation uses, as presented in Department of Water Resources Bulletin No. 58, "Northeastern Counties Investigation".





## NORTHEASTERN COUNTIES INVESTIGATION

- I. Probable Ultimate Population and Economic Development.
- II. Potential Ultimate Recreation Development.

Report prepared by  
Harold F. Wise & Associates,  
Consultants in  
Planning and Urban Economics

for the

State of California  
Department of Water Resources

March 1957

Harold F. Wise & Associates  
707 Forum Building  
Sacramento 14, California



March 15, 1957

telephone GIlbert 2-4877

Mr. William L. Berry  
Chief, Division of Water Resources Planning  
California State Department of Water Resources  
P. O. Box 1079  
Sacramento 5, California

Dear Mr. Berry:

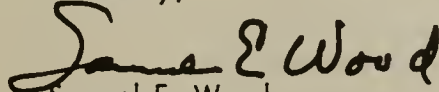
There is submitted a report in two parts, on probable ultimate population, economic and recreation development in California's northeastern counties, predicated upon full development of their natural resources.

The report is intended to assist the Department in its determinations of ultimate water requirements in the northeastern counties.

The first part of the report deals with population and the probable future pattern of economic development. It is estimated that domestic water requirements will be those of a population of approximately 1,750,000, of whom about 70 percent will live in urban areas. No unusual water requirements are now anticipated for industrial purposes, apart from processing of pulp and paper products.

The second part of the report deals with potential development of recreation resources, including recreation use of reservoir areas. The study indicates that the area can support a very great expansion of recreation facilities and recreation use. It is anticipated that the bulk of the population of the northeastern county area will ultimately be supported by activities related to development and use of its recreation resources, and its desirability as a place to live.

Sincerely,



Samuel E. Wood  
Resident Partner.

### NOTE

The consultant's report has been prepared in two parts, one dealing with projections and forecasts of probable ultimate population, employment and general economic development in the northeastern counties; the other with the potential development and use of the recreation resources of the area, including proposed water resource development projects.

Both reports have as their primary purpose to assist the Department of Water Resources to estimate probable ultimate water requirements of the northeastern counties, predicated upon full development of their natural resources.

## CONTENTS

Introductory Statement

Letter of Transmittal

Acknowledgement

### PART ONE

#### PROBABLE ULTIMATE POPULATION AND ECONOMIC DEVELOPMENT IN CALIFORNIA'S NORTHEASTERN COUNTIES, PREDICATED UPON FULL DEVELOPMENT OF NATURAL RESOURCES

	<u>Page</u>
I SCOPE AND PURPOSE OF REPORT	1
II SUMMARY OF FINDINGS	2
III ANALYSIS OF TRENDS AND PATTERNS OF ECONOMIC DEVELOPMENT AND POPULATION GROWTH	8
Present development	8
Probable future economic development	10
Growth patterns	12
Probable ultimate population and employment	14
Population density	16
Comparison with state and national development	18
1. Proportion of employment provided by agriculture	18
2. Proportion of employment provided by manufacturing	22
3. Proportion of employment provided by agriculture and lumbering	25
4. Relation of 15-county population growth to that of the United States	29
Extent of in-migration	30

## CONTENTS (Cont'd)

	<u>Page</u>
IV METHOD OF ESTIMATING ULTIMATE EMPLOYMENT AND POPULATION IN NORTHEASTERN COUNTIES	31
A. Summary	31
Framework of estimates	32
County factors considered in preparing estimates	33
B. Assumptions about living conditions in 2050	36
C. Projections of the populations of the United States and California to the year 2050	39
Need for population projections	39
Assumptions and procedures in projecting populations of the United States and California to the year 2050	39
Comparability with other estimates	46
D. Estimation of ratio of total employment to total population at time of ultimate development	49
Assumptions concerning future characteristics of county populations	49
Estimation of percentage 1, at ultimate development	50
Estimation of percentage 2, at ultimate development	53
Estimation of percentage 3, at ultimate development	58
Summary: percentage 1 x percentage 2 x percentage 3	58
Employment ratio for 15 northeastern counties	59
E. Distribution of employment, United States and California 1870 - 1950 with projections	65
Purposes and uses of data in Tables 11 and 12	65
Sources of data in Tables 11 and 12	66

## CONTENTS (Cont'd)

	<u>Page</u>
F. Estimation of farm population and employment	68
Farms, farm population and employment	68
Increase in irrigated acreage	68
Reversal of trend toward larger farms	69
Assumptions underlying the projections	69
Statewide increase in irrigated acreage	70
Basis for population increase	71
Ratio of new irrigated acreage to new farms	71
Procedure for estimating farm population and employment	74
G. Estimation of April 1 employment in lumber and wood products industries in 15 northeastern California counties under conditions of probable ultimate sustained yield	78
Sustained yield	78
Employment factors	79
Full utilization	80
April 1 employment	85
Pulp, paper and board	88
Output of major timber products	91
V. BASIC DATA AND PROJECTIONS	94
Population	94
Employment	94
Farm population and employment	95

## CONTENTS (Cont'd)

### PART TWO

#### POTENTIAL ULTIMATE RECREATION DEVELOPMENT IN CALIFORNIA'S NORTHEASTERN COUNTIES, PREDICATED UPON FULL DEVELOPMENT OF NATURAL RESOURCES

	<u>Page</u>
I INTRODUCTION	114
Recreation: a new "industry"	114
Recent increase in recreation use	115
Prospect of accelerated development	116
Recreation use capacity of northeastern county area	118
Foothill residential areas	119
II CLASSIFICATION AND MEASUREMENT OF RECREATION AREAS	121
Classification of recreation areas	121
Area characteristics	122
Recreation facility classification	127
County totals of potential recreation area (Table 2)	128
III ESTIMATION OF RECREATION USE	130
Recreation benefit	131
Relative contribution of counties to recreation benefit	133



## CONTENTS (Cont'd)

	<u>Page</u>
IV RECREATION RESOURCES OF THE NORTHEASTERN COUNTIES	135
Butte County	136
Colusa County	137
Glenn County	138
Lake County	140
Lassen County	141
Modoc County	143
Plumas County	144
Shasta County	145
Sierra County	146
Siskiyou County	147
Sutter County	148
Tehama County	149
Trinity County	150
Yolo County	151
Yuba County	152

## CONTENTS (Cont'd)

<u>TABLES (Part One):</u>	<u>Page</u>
1 Population of 15 N. E. California counties 1920 - 1956 and probable ultimate population 2020 - 2050	7
2 Population and employment in 15 N. E. counties as percent of California state totals 1930 - 1950 and ultimate	9
3 Relation between urban population and employment in agriculture and timber industries 1870 - 1950	9
4 Population density in 15 N. E. counties, 1956 and ultimate	18
5 Population data and projections for California 1930 - 1950 and ultimate	21
6 Employment data and projections for California 1940 - 1950 and ultimate	23
7 Population of the United States 1900 - 1950 with estimates and projections to 2050	47
8 Population of California 1900 - 1950 with estimates and projections to 2050	48
9 Computation of percentages of population in the labor force and employed in California at ultimate development 2020 - 2050	57
10 Employment (April 1) as percent of population in 15 N. E. counties at ultimate development (2020 - 2050)	64
11 Trends in functional distribution of employment in United States 1870 - 1950	67
12 Trends in functional distribution of employment in California 1870 - 1950, with estimates for 1956 and 2020 - 2050	67
13 Average number of new irrigated acres per new farm in 15 N. E. counties from 1954 to 2050	73
14 Rural farm population and employment: data and projections for California 1930 - 1954 and ultimate	77

## CONTENTS (Cont'd)

	<u>Page</u>
15    Employment (April 1) in timber industry, 15 N. E. counties, 1940, 1950 and at sustained yield	81
16    Current timber production and sustained yield capacity of commercial forest land in 15 N. E. counties	82
17    Labor requirements per unit of production in lumber and wood products industries with present utilization	83
18    Employment ratios in lumber and wood products industries with full utilization	84
19    Employment in California lumber and wood products industries as of April 1 as percent of annual average employment	87
20    Estimated total yearly employment in pulp, paper and board production resulting from sustained yield cutting program and full forest utilization in 15 N. E. counties	92
21    Estimated annual production of major timber products in 15 N. E. counties at sustained yield	93
22-37    Population data and projections, 1920 - 1950 and ultimate, for 15 N. E. counties; total and by counties	96
38-53    Employment data and projections, 1940 - 1950 and ultimate, for 15 N. E. counties; total and by counties	97
54-69    Rural farm population and employment data and projections, 1930 - 1954 and ultimate, for 15 N. E. counties; total and by counties	98

## CONTENTS (Cont'd)

<u>TABLES (Part Two):</u>	<u>Page</u>
1 Standards used to classify and measure potential recreation areas	154
2 Acres in potential recreation areas and urban areas	155
3 Estimated user-days per season at capacity use of potential recreation areas in 15 northeastern counties	171
4 Estimated annual user-days at reservoir facilities at capacity use	171

## PLATES

A - 1	Graph: Population growth and projections, 1910 - 2050	6
A - 2	Graph: Recreation use of national forests in California and projections -- visitor days per capita, 1941 - 2050	following 117
A - 3	Map: Classification of lands for urban, suburban and recreation use	following 171

## ACKNOWLEDGEMENT

Mr. Van Beuren Stanbery, economic consultant, San Francisco, devised the assumptions, techniques and general methodology used in the study of population and economic development, and directed the application of these methods in the preparation of the report. Mr. Stanbery developed the trends and projections of employment and population, and prepared most of the text thereon.

The authors are indebted to Professor David Weeks of the University of California for suggestions on the scope and orientation of the study, and for making available valuable reports on population, irrigation development, and land utilization in the Sierra Nevada Foothills. \*

Mr. Eugene V. Roberts and Mr. Richard H. May of the California Forest and Range Experiment Station gave valued advice and information, and reviewed the text of the section on employment in the lumber and wood products industries.

Mr. A. D. Reed of the University of California Extension Service made available studies which were of material assistance in estimating agricultural employment. (Responsibility for the estimates presented in the report is of course entirely that of the authors).

Information essential to the preparation of the report on population and economic development was also obtained from the following:

Mr. John R. Berry and Mr. W. R. Howden,  
Office of the Regional Forester,  
U. S. Forest Service, San Francisco.

Mr. Ray Hurley, Chief, Agriculture Division,  
Bureau of the Census, Washington, D. C.

Mr. Wilbur Parker, Research and Statistics,  
State Department of Employment.

Mr. L. B. Christiansen, Economics and Allocations Branch,  
U. S. Bureau of Reclamation, Region 2,  
Sacramento.

Mr. J. R. Braden, Richmond-Chase Company, San Jose.

Mr. Alan Richardson, California Packing Corporation,  
San Francisco.

Mr. W. J. O'Connell, Consulting Engineer, Burlingame.

Mr. Charles L. Wheeler, Pope and Talbot Lumber Company,  
San Francisco.

Mr. Charles E. Young, Economist, Weyerhaeuser Timber Company,  
Tacoma.

Mr. Henry H. Symonds, Assistant Mining Engineer,  
State Division of Mines

Mr. William B. Clark, Assistant Mining Geologist,  
State Division of Mines

Mr. John C. O'Brien, District Mining Engineer,  
State Division of Mines

---

\* Division of Water Resources, Bulletin No. 35, Permissible  
Economic Rate of Irrigation Development in California, State  
Printing Office, Sacramento, 1930

David Weeks, A. E. Wieslander, H. R. Josephson and C. L.  
Hill, Land Utilization in the Northern Sierra Nevada, Special  
Publication of the Giannini Foundation of Agricultural Economics,  
University of California, Berkeley, 1943.

Howard E. Conklin, David Weeks, and Ralph B. Wertheimer,  
The Possibilities of Rural Zoning in the Sierra Nevada Foothills,  
United States Bureau of Agricultural Economics in cooperation  
with California Agricultural Experiment Station, Berkeley,  
June 1942.

Valued interest and support was given to the survey by the area's representatives in the State Legislature:

In the Senate: the Honorable Stanley Arnold, 1st District; the Honorable Randolph Collier, 2d District; the Honorable Paul L. Byrne, 6th District; the Honorable Nathan F. Coombs, 11th District; the Honorable Ed. C. Johnson, 10th District; the Honorable Harold T. Johnson, 7th District; the Honorable Edwin J. Regan, 5th District; and the Honorable Louis G. Sutton, 8th District.

In the Assembly: the Honorable Frank P. Belotti, 1st District; the Honorable Pauline L. Davis, 2d District, the Honorable Lloyd W. Lowrey, 3d District; and the Honorable Harold Sedgwick, 4th District.

The report owes much to the cooperation provided by county officials and agencies, supervisors and staff of the U. S. Forest Service, and private citizens representing agriculture, industry, commerce and recreation, with whom meetings were held in each county and from whom much valuable information on county conditions and development prospects was obtained.

Valued assistance in the recreation survey was given by the following officials of the U. S. Forest Service, California Region:

M. M. Barnum, Assistant Regional Forester

Earl E. Bachman, Forester, Division of Recreation Land

K. W. Kennedy, Chief, Division of Watershed Management  
and Engineering



V. A. Parker, Supervisor, Lassen National Forest  
A. H. Mullen, District Ranger, Lassen National Forest  
Russell W. Bower, Supervisor, Klamath National Forest  
Alfred K. Crebbin, Forester, Timber Management, Klamath  
National Forest  
Alva L. Morford, Fire Control Dispatcher, Klamath National Forest  
Robert E. Dasmann, Supervisor, Mendocino National Forest  
Neal M. Rahm, Supervisor, Modoc National Forest (now  
Assistant Regional Forester, Rocky Mountain Region)  
William A. Peterson, Supervisor, Plumas National Forest  
George A. Fischer, Forester, Plumas National Forest  
Paul W. Stathem, Supervisor, Shasta-Trinity National Forests  
Dana W. Cox, Forester, Range and Wildlife Management,  
Shasta-Trinity National Forest  
Mrs. Rose Snyder, Assistant to Mr. Cox  
W. W. Spinney, Supervisor, Six Rivers National Forest  
L. A. Rickel, Supervisor, Tahoe National Forest

Acknowledgement is also made to the following officials of the  
State Division of Forestry:

Tobe Arvola, Forest Management Office  
William Fairbank, Education  
Gunnor Forssbeck, Mapping Division

Also to:

Vernon Ekdahl, Refuge Manager, U. S. Fish and Wildlife Service  
Wallace C. Dry, California State Department of Fish and Game



County officials who assisted in arranging meetings, interviews  
and field surveys include:

<u>Butte County:</u>	Harriett James, County Clerk Wing Fee Chan, Director of Planning
<u>Colusa County:</u>	Herman Fendt, Chairman, Board of Supervisors
<u>Glenn County:</u>	Noble Richardson, Secretary, Chamber of Commerce
<u>Lake County:</u>	L. D. Kirkpatrick, Chairman, Board of Supervisors
<u>Lassen County:</u>	Nadene Wemple, County Clerk Gerald Packwood, Chairman, Board of Supervisors Lester Coffin, Supervisor, District 2
<u>Modoc County:</u>	Millicent Dubois, County Clerk Irma Laird, County Historian
<u>Plumas County:</u>	Max Forbes, Manager, Chamber of Commerce E. B. Bond, County Agricultural Commissioner J. C. Cloman, Supervisor, District 4
<u>Shasta County:</u>	William Minton, County Administrator John Reginato, President, Shasta-Cascade Wonderland Assn. Andrew T. Jessen, Chairman, Board of Supervisors
<u>Sierra County:</u>	Roland P. DeGrio, Chairman, Board of Supervisors
<u>Siskiyou County:</u>	Joe G. Allen, Chairman, Board of Supervisors Jess O'Roke, County Administrator Harry Crebbin, Manager, Yreka Chamber of Commerce
<u>Sutter County:</u>	Eber F. Beilby, Chairman, Board of Supervisors
<u>Tehama County:</u>	Earl Davies, Chairman, Board of Supervisors

Trinity County:

J. J. Jackson, Historian, Trinity County

Melvin E. Dale, Road Commissioner

Lorene Melquist, County Planning Commission

R. J. Blaney, Secretary, Weaverville  
Chamber of Commerce

Yolo County:

Lawrence D. Drew, Chairman, Board of Supervisors

L. E. DuBois, Supervisor, District 4

S. T. Drever, Secretary, Yolo County Planning Commission

Yuba County:

Harold J. Sperbeck, Chairman, Board of Supervisors

Bruce Rodgers, Secretary, Yuba County Chamber of  
Commerce

HAROLD F. WISE & ASSOCIATES

Project Staff

Samuel E. Wood

Bruce Waybur

Kenneth Anderson

Martin Dreyfuss

Barbara Kemp

Margaret Wiederhold

Esther Marie Matthews

Winifred McGowan

Marjorie Greene

Lee Joyal

Van Beuren Stanbery

economic consultant

---



PART ONE

PROBABLE ULTIMATE POPULATION AND ECONOMIC  
DEVELOPMENT IN CALIFORNIA'S NORTHEASTERN  
COUNTIES, PREDICATED UPON FULL DEVELOPMENT  
OF NATURAL RESOURCES

Prepared  
in cooperation with  
Van Beuren Stanbery, Economic Consultant



# NORTHEASTERN COUNTIES INVESTIGATION

## Projections of Population and Economic Development

### I. SCOPE AND PURPOSE OF REPORT

To assist in determining ultimate water needs of the counties of Butte, Colusa, Glenn, Lake, Lassen, Modoc, Plumas, Shasta, Sierra, Siskiyou, Sutter, Tehama, Trinity, Yolo and Yuba, studies and projections have been made of present and probable ultimate population and economic development in those counties. These studies are intended to be of direct use in estimating consumptive water use in urban, suburban, rural-farm, and rural-nonfarm areas, according to methods described in State Water Resources Board Bulletin No. 2 (June 1955).

Additional demand for water for personal consumption will be created by development of potential recreation areas. The classification and measurement of such areas are discussed in a companion report which follows this monograph.

## II. SUMMARY OF FINDINGS

1. California's northeastern counties are still in the primary stages of economic development, with high dependence on agriculture and the manufacture of lumber and wood products from local natural resources. Their populations are relatively small and predominantly rural, with no large urban concentrations.

The patterns of population and economic development of the northeastern county area in 1950 were strikingly similar to those of the state of California in the year 1870.

2. The northeastern counties have great resources of agricultural, forest and recreational lands, water and hydro-electric power, that can be more intensively developed and used. The area has a large potential for future growth through increased irrigation of its agricultural lands, expanded utilization of its forest products, and development of its recreation attractions. Full development of the agricultural, forest, recreational, water and power resources of the northeastern counties is a basic requirement for achievement of the ultimate economic and population growth projected in this study.



3. In addition, technological advances and the huge expected increases of population in the United States and California will eventually lead to a concomitant development and growth in the northeastern counties. The natural advantages of the northeastern counties for outdoor recreation, for human habitation, and for new types of industry and services will inevitably draw thousands of part-time and full-time residents from other parts of the nation and state. The greater part of the future population increase in the area as a whole is expected to be supported by activities other than the production and marketing of commodities derived from local natural resources.

At the same time, agriculture and the utilization of forest products will continue to provide substantially larger proportions of total employment for the northeastern county area than for the state as a whole.

4. At the time of ultimate development of the natural resources of the area (years 2020-2050), it is estimated that:

Population will have increased to

375,000,000 in the United States;

45,000,000 in California; and

1,750,000 in the northeastern county area.

Irrigated lands in the northeastern county area will have increased to 3,803,900 acres, about three times the acreage in 1954 and three and one-half times that in 1949.

Number of farms and farm population in the area will be approximately twice those in 1950. Agricultural employment (as of April 1) will also be about double that of 1950.

Employment in lumber and wood products industries (as of April 1) in the area will be about twice that of 1950. In addition, a substantial number of persons will be employed in pulp and paper products industries of which the area had none in 1950.

Total manufacturing employment (April 1) in the area will approximate 639,000 compared with 116,000 in April 1950.

Mining (excluding petroleum extraction) and forestry will continue to provide a somewhat higher proportion of total employment in the area than will be true in the rest of the state, but the volume of such employment will be relatively small.

Other employment (construction, distribution and service activities) will account for a majority of the jobs in the area. The proportion of total employment accounted for by this category will rise from 61 percent in 1950 to an estimated 74 percent in 2020-2050.

Anticipated development of recreation areas will provide substantial employment in trade and service activities and will induce settlement of many permanent non-farm residents therein.

Urban residents will comprise the bulk of the area's population. Urban population will rise to about 69 percent of the area's population, compared with 35 percent in 1950.

Rural farm population and rural non-farm population will both increase in numbers, but will decline in percent of total population.

Gross population densities will approximate 48 persons per square mile, a little more than the state average in 1940.

The geographical locations and patterns of ultimate growth in the area will generally follow those of present development. The largest concentrations of urban population and industrial and commercial activities are expected in those counties which now have the largest urban populations: Butte, Shasta, Yolo and Yuba, and also Sutter. Although some counties will grow more rapidly than others, the ranking of the counties in total population and total employment at time of ultimate development will be approximately the same as now.

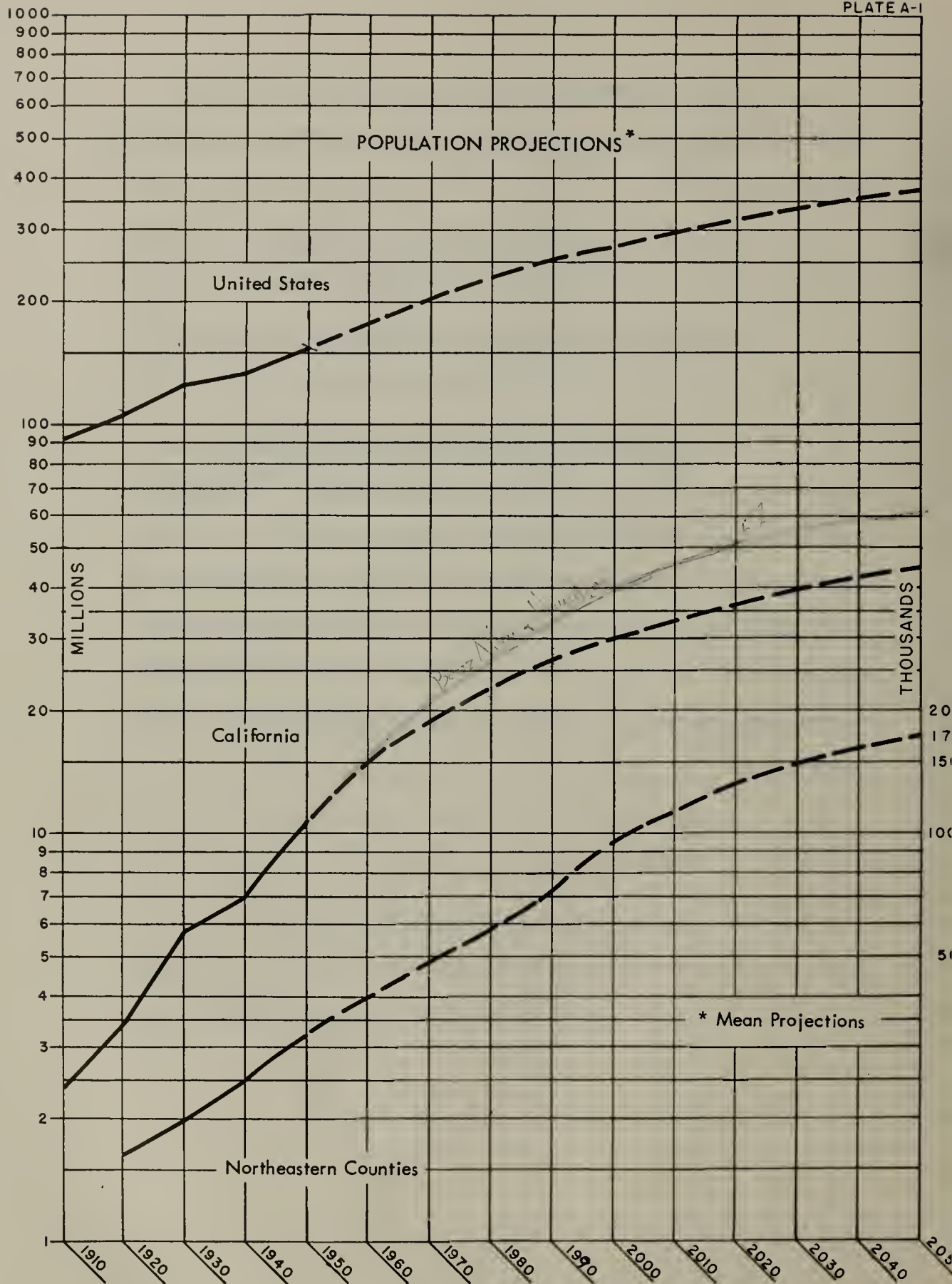


Table 1

POPULATION OF 15 NORTHEASTERN CALIFORNIA COUNTIES 1920-1956  
AND PROBABLE ULTIMATE POPULATION 2020-2050

	Jan. 1 1920	Apr. 1 1930	Apr. 1 1940	Apr. 1 1950	July 1 1956	Probable Ultimate 2020-2050
Butte	30,030	34,093	42,840	64,930	69,300	284,000
Colusa	9,290	10,258	9,788	11,651	11,400	68,000
Glenn	11,853	10,935	12,195	15,448	16,300	85,000
Lake	5,402	7,166	8,069	11,481	11,000	65,000
Lassen	8,507	12,589	14,479	18,474	16,900	67,500
Modoc	5,425	8,038	8,713	9,678	9,500	51,100
Plumas	5,681	7,913	11,548	13,519	11,800	44,700
Shasta	13,361	13,927	28,800	36,413	45,000	195,000
Sierra	1,783	2,422	3,025	2,410	2,200	16,000
Siskiyou	18,545	25,480	28,598	30,733	32,200	127,200
Sutter	10,115	14,618	18,680	26,239	28,500	121,800
Tehama	12,882	13,866	14,316	19,276	20,300	105,100
Trinity	2,551	2,809	3,970	5,087	6,500	22,000
Yolo	17,105	23,644	27,243	40,640	53,100	390,000
Yuba	10,375	11,331	17,034	24,420	28,100	105,000
15-county total	162,905	199,089	249,298	330,399	362,100	1,747,400
Percent of state	4.75	3.51	3.61	3.12	2.66	3.9
State total	3,426,861	5,677,251	6,907,387	10,586,223	13,600,000	45,000,000



### III. ANALYSIS OF TRENDS AND PATTERNS OF ECONOMIC DEVELOPMENT AND POPULATION GROWTH IN THE NORTHEASTERN COUNTY AREA

In terms of economic geography, the northeastern counties fall into two, or possibly three, economic areas. The counties of Butte, Colusa, Glenn, Sutter, Tehama, Yolo and Yuba constitute State Economic Area No. 4, as defined by the Bureau of the Census. These are predominantly valley counties. The counties of Lassen, Modoc, Plumas, Shasta, Sierra, Siskiyou, and Trinity are part of State Economic Area No. 9. These are predominantly mountain counties. Lake County lies in State Economic Area No. 1 comprising north-coastal counties which are predominantly mountainous.

State economic areas are groups of counties having similar agricultural, demographic, climatic, physiographic, and cultural characteristics.

#### Present Development

Taken as a whole, the northeastern county area has 23.0 percent of the state's land area, but in 1956 had only 2.7 percent of its civilian population (Table 1). Average gross density of population was ten persons per square mile compared with the state average of 85 persons per square mile.

The 15-county area today has a little more than one percent of the state's urban population, and about 11 percent of its farm population (Table 2).

Table 2

POPULATION AND EMPLOYMENT IN 15 NORTHEASTERN COUNTIES  
AS PERCENTAGE OF CALIFORNIA STATE TOTALS

All data as of April 1

	1930	1940	1950	Probable Ultimate
Total population	3.51	3.61	3.12	3.9
Urban population	0.89	0.90	1.34	3.0
Rural non-farm population	10.29	10.03	10.48	10.7
Rural farm population	11.35	10.70	10.73	12.0
Total employment	3.58	3.41	2.98	3.8
Farm employment	9.99	8.92	8.87	11.5
Wood products employment (excl. pulp and paper)	15.20	22.52	19.58	20.0
Mining employment - total	7.28	10.61	3.55	2.7
- excl. oil and gas	19.57	22.67		

Source (1930-1950 data): U. S. Bureau of the Census

Table 3

RELATION BETWEEN URBAN POPULATION AND EMPLOYMENT IN  
AGRICULTURE AND LUMBER AND WOOD PRODUCTS INDUSTRIES

	United States			California		
	Percent Urban Population	Percent Em- ployment in Two Industries	Sum of Percentages	Percent Urban Population	Percent Em- ployment in Two Industries	Sum of Percentages
1870	25.7	55.9	81.6	37.2	33.9	71.1
1880	28.2	52.9	81.1	42.9	33.4	76.3
1890	35.1	44.5	79.6	48.6	32.5	81.1
1900	39.7	40.7	80.4	52.3	28.1	80.4
1910	45.7	34.6	80.3	61.8	21.1	82.9
1920	51.2	29.6	80.8	67.9	20.0	87.9
1930	56.2	27.3	83.5	73.3	15.5	88.8
1940	56.5	20.7	77.2	71.0	12.3	83.3
1950	64.0	14.3	78.3	80.7	9.1	89.8

Source: U. S. Bureau of the Census; Margaret S. Gordon, Employment Expansion and Population Growth, The California Experience 1900-1950, University of California Press 1954

The economy of the 15-county area has been built historically on agriculture, lumbering, and mining. Agriculture is a major activity in all the counties, and is the foundation of the economies of the valley counties. Lumber production is the leading industry in the mountain counties, excluding Lake.

Approximately two-thirds of the population of the northeastern county area is now supported directly and indirectly by agriculture and the timber industry. Likewise, two-thirds of the area's population today is rural.

The area presently accounts for about 11 percent of annual state agricultural production (by value), and 34 percent of California's timber products output (measured in board feet of sawlogs).

Mining, once the leading industry in the mountain counties, has dropped to a relatively minor role in recent years. In 1954, value of mineral production in the 15 counties was only 0.9 percent of the state total. In minerals other than oil and gas, the 15-county share was somewhat larger.

#### Probable Future Economic Development

The 15-county area has about one-fifth of the state's farm land, and more than half of its commercial forest land. These resources will continue to support a substantial but declining proportion of the area's population.



Known mineral reserves indicate a potential for long-term sustained economic activity, but the proportion of population supported by mining is expected to remain relatively small.

In the years to come, it is expected that "foot-loose" industries, not dependent on agricultural, timber or mineral resources in the counties, will play an increasing part in their economies.

Trade and service industries are expected to increase greatly in proportion to other economic activities. Economic activities based on development and use of recreation resources are expected to become a major economic support of the 15-county area, and in some counties will rank as the "No. 1 industry". These activities will be predominantly in services to tourists and to persons residing in the area because of its scenic, climatic and other natural attractions.

Development of the northeastern county area has been held back to a considerable degree by inadequate transportation. The central valley portion of the area is traversed by major rail and highway routes; but there are relatively few rail and highway routes "off the main line". In the mountain counties, most roads are elementary and some areas cannot be reached by roads. Nevertheless the area has the framework for an improved transportation system built around such transfer points as Redding, Red Bluff, Chico, Marysville, and Davis.

## Growth Patterns

This forecast of development trends in the northeastern counties has been guided by studies in the field of economic geography which show that as a large rural region, such as the northeastern county area, becomes more highly developed and populated, its pattern of economic and population growth follows certain definite trends. Among these are:

1. The proportion of total employment in the region provided by extractive activities (agriculture, forestry, and mining) and in manufacture of products from local natural resources (e.g. lumbering) steadily declines.
2. Employment and population in urban communities of the region grow more rapidly than employment and population in rural sections, with consequent increases in the proportion of urban population in the region.\*

---

\* The term "urban population" in this report refers to the classification used by the Bureau of the Census. Before 1950, urban population referred to persons living in incorporated places of 2,500 or more. In 1950 the definition was broadened to include unincorporated places of 2,500 or more. The classification also includes the densely settled "urban fringe", including both incorporated and unincorporated places, around cities of 50,000 or more.

The Department of Water Resources employs a definition of urban lands which takes in much of what the Bureau of the Census classifies as "rural-non farm." In the 1940 and earlier Censuses, persons living in the suburbs of cities constituted a large proportion of the rural-non farm population. Under the new definition, a considerable number of such persons are transferred to the urban population. The rural-non farm population still includes villages and hamlets of less than 2,500 inhabitants, and some of the fringe areas surrounding smaller cities, which come under the Department of Water Resources classification of "urban" or "suburban" lands.

A remarkably constant relationship has been noted between the decline of the percent of total employment provided by agriculture and lumbering and the rise in the percentage of urban population. This is shown by the trends of these percentages in the United States and the State of California from 1870 to 1950 presented in Table 3.

In view of the large expected rise of population, economic activity and income levels in the United States and California from 1950 to the time of probable ultimate development of the natural resources of the 15-county area (years 2020-2050) and the pressure and potentials for economic development and population growth in the northeastern counties, it can be expected that the proportion of total employment in the area provided by agriculture and lumbering in the period 2020-2050 will range between 10 and 15 percent. Consequently it is estimated that the urban population of the area will then comprise about 70 percent of the total population.

The projections of employment and population in the 15-county area in the period 2020-2050, stated below, have been derived from detailed studies of potential development of natural resources in the individual counties and from established trends of economic development and population growth in the nation, state and area.

### Probable Ultimate Population and Employment

At ultimate development, in the period 2020-2050, the northeastern counties will have a total population of approximately 1,750,000. This is about 5.3 times the 1950 population of the area, and 4.8 times the estimated 1956 population.

It is estimated that about 36.6 percent of this population, on the average, will be employed, indicating a total employment of approximately 639,000. Construction, distribution, trade and service activities will provide nearly three-fourths of this employment; in 1950 they already accounted for 60 percent of employment in the northeastern county area.

Extractive industries, which accounted for nearly one-fourth of employment as of April 1, 1950, will ultimately account for slightly less than ten percent. Manufacturing will increase its share from 15.8 percent in April 1950 to around 17 percent.

The area's dependence on agriculture and lumbering will be greatly reduced. In 1950 these industries accounted for 33.5 percent of direct employment in the 15-county area as of April 1. Ultimately it is anticipated that this proportion will decline to about 12.8 percent (14.2 percent if pulp and paper products are included). This decline in relative importance will occur despite an anticipated increase in the absolute numbers of persons employed both in agriculture and in the lumber and wood products industries.

Employment in agriculture is expected to more than double - from the 25,416 reported by the Census Bureau for April 1, 1950, to approximately 55,000 as of April 1 at ultimate development. This will be made possible primarily by an increase in irrigated acreage from 1,085,000 acres in 1950 to an estimated 3,803,900 at ultimate development. Total acreage in farms is expected to remain about the same as in 1954, though slightly higher than in 1950.

Employment in lumber and wood products industries, excluding pulp, paper and paper products, is expected to double - from 13,543 reported by the 1950 Census, to an estimated 27,000. In addition, an estimated 8,900 jobs will be provided in pulp, paper and paperboard manufacture, which is just now beginning in the area. This projected increase in employment in the timber industry assumes a sustained yield cutting program, maximum recovery of tree products in the forest, and full utilization of these products at the mills.

Mining is not presently an important source of employment in the northeastern county area. Some resumption of mining activity, on a sustained basis, is anticipated in the employment projections of this report.

In keeping with the decline in importance of extractive industries, the proportion of population living in rural areas is expected to decline from 65 percent as reported in the 1950 census, to about 31 percent. Conversely, the proportion of population residing in urban areas will just about double - from 35 percent in 1950 to about 69 percent.



The relative position of each county in the area with respect to population and population density will remain about the same it is now. The geographical pattern of ultimate population and economic development in the northeastern county area appears to be generally established by the present relative degrees of development among counties.

Butte, Yolo, Shasta, Siskiyou and Sutter counties, in that order, presently rank highest in population and account for about 63 percent of the population of the area. At ultimate development, Yolo will be first in population but otherwise the positions are expected to be unchanged; the five counties together will account for an estimated 64 percent of total population in the northeastern county area.

#### Population Density

The ratio of population density in the 15 counties to that in the state will be about the same as in 1940 - approximately one-sixth the state average. In 1940, the average gross population density of California was 44.1 persons per square mile. Density was 6.9 persons per square mile in the 15-county area. Thus, the state density was 6.3 times the area density in 1940.

With ultimate total population of 1,750,000 in the 15-county area, the average gross population density would be approximately 48.5 persons per square mile. Average gross population density of California at ultimate development, with a population of 45,000,000 will be 288.5 persons per square mile. This is approximately six times the density expected in the 15-county area.

Average gross population density is presently highest in Yolo, Sutter, Yuba, and Butte counties, in that order. At ultimate development these counties will continue to have substantially greater gross population density than the other northeastern counties (Table 4).

Gross population density is not to be confused with concentration of urban population. However, as indicated on an earlier page, these counties, plus Shasta County, are also those which are expected to have the largest urban populations at ultimate development, reflecting the generally close relationship between economic development, urban growth and total population.

With suitable controls over development, gross population density in urban areas might average about eight persons per acre (5,120 persons per square mile). This assumes an average of 8.5 persons per urban acre in Yolo, Sutter, Shasta and Siskiyou counties; 8.0 per acre in Butte and Yuba counties; and 7.0 per acre in all other counties. If these densities seem low, it may be noted that a density standard of 150 persons per square mile - 0.23 persons per acre - is used by the Bureau of the Census as one of the criteria of metropolitan character.

With the urban population estimated in this report - 1,203,500 - an average density of 8.0 persons per acre would permit the northeastern counties to meet their needs for urban land, including urban industrial sites, with slightly more than 150,000 acres.

## POPULATION DENSITY IN 15 NORTHEASTERN COUNTIES

County	<u>1956</u> (Population per square mile)	<u>Ultimate (2020-2050)</u>
Yolo	51.4	377
Sutter	47.0	201
Yuba	44.0	165
Butte	41.7	171
Glenn	12.4	65
Shasta	11.8	51
Colusa	9.9	59
Lake	8.8	52
Tehama	6.8	35
Siskiyou	5.1	20
Plumas	4.6	17
Lassen	3.7	15
Modoc	2.3	12
Sierra	2.3	17
Trinity	<u>2.0</u>	<u>7</u>
Average	10.0	48

Comparison with state and national development1. Proportion of Employment Provided by Agriculture

The proportion of total employment in agriculture has been declining since 1920 and will continue to decline, in the nation, the state and each of the 15 counties.



Because California is now a highly urbanized state, the proportion of all California employment provided by agriculture in April 1950 was only 7.3 percent (Table 12). Hence, the extent of further decline in this percentage (and in the percentage of farm population) will be relatively small in the state as a whole.

From study of the potential ultimate development of irrigated land and accompanying shifts in crop patterns and the projected growth of the total population, it is estimated that about 2.8 percent of total employment in California at time of ultimate development of its land resources (years 2020-2050) will be provided by agriculture. Although both agricultural employment and rural farm population in California at time of ultimate development, are estimated to be about 2-1/4 times the April 1950 figures, the rural farm population will decline from 5.4 percent of state population in 1950 to about 2.4 percent at ultimate development (see Table 5).

Each of the 15 counties is less developed economically and its population is now more rural and less urban than is the case for the state as a whole. For the 15-county area as a whole the percentage of employment provided by agriculture April 1, 1950 (21.9 percent) was three times the state figure of 7.3 percent (Tables 6 and 38). The area's proportion of rural farm population in April 1950 (18.5 percent) was 3.6 times the state figure of 5.4 percent (Table 5 and Table 54).

Hence, the proportion of total employment provided by agriculture (and the percent of rural farm population) will decline to a greater extent in these counties than in the state as they become more highly developed and more densely populated. Conversely, their percentages of urban population and of employment in non-agricultural activities (which were much below the state percentages in April 1950) will rise to a greater degree than the state percentages and will be closer to the state percentages at ultimate development than they were in 1950.

The decline in agriculture's relative importance will, of course, be greatest in the counties in which urban population and non-agricultural employment are expected to show the largest increases from 1950 to ultimate development, such as Butte, Shasta, Yolo and Yuba counties.

The analysis of agricultural development presented here implies continued net out-migration of population from farm areas in both the state and the 15-county area. In other words, if no future net out-migration of farm residents should occur between now and 2050, the expected natural increase of the farm population in the state and also in the 15-county area as a whole would produce larger ultimate farm populations than those estimated herein.

Table 5

## POPULATION DATA AND PROJECTIONS

## State of California

	Jan. 1 1920	Apr. 1 1930	Apr. 1 1940	Apr. 1 1950	Ultimate
Total popu- lation	3,426,861	5,677,251	6,907,387	10,586,223	45,000,000
Urban*	2,331,729	4,160,596	4,902,265	8,539,420	40,050,000
Rural farm	493,513	579,350	635,389	568,231	1,070,000
Rural non-farm	601,619	937,305	1,369,733	1,478,572	3,880,000
Percent distri- bution	100.0	100.0	100.0	100.0	100.0
Urban*	68.0	73.3	71.0	80.7	89.0
Rural farm	14.4	10.2	9.2	5.4	2.4
Rural non-farm	17.6	16.5	19.8	13.9	8.6

\* 1950 urban population includes unincorporated places having 2,500 inhabitants or more. In previous years, only incorporated places of 2,500 inhabitants or more were considered "urban".

Population data and projections for the 15 counties are presented in Tables 22-37.

## 2. Proportion of Employment Provided by Manufacturing

In the United States as a whole the proportion of total employment provided by manufacturing rose from 19.4 percent in 1900 to 25.9 percent in 1950 (Table 11). It should be noted, however, that the rise in this percentage was influenced by the large decline in the percentage of agricultural employment. In view of expected continued increases in automation and in average productivity per man-hour of labor in manufacturing, it is estimated that the proportion of total employment provided by manufacturing in the nation in the period 2020-2050 will be about the same as in 1950 and will probably range between 24 and 26 percent.

Because manufacturing has been relatively less developed in California than in the nation as a whole, the proportion of total state employment provided by manufacturing was below the national proportion in each census year 1870-1950 (Table 11 and Table 12). The rapid growth of manufacturing industries in California since 1940, however, is tending to raise the state's percentage of manufacturing employment closer to the national percentage.

In the period 2020-2050, it is expected that manufacturing in California will have nearly the same degree of development relative to other economic activities as in the nation, and that the proportion of employment then provided by manufacturing will be about 22.5 percent, or about the same as estimated for April 1956.

Table 6

## EMPLOYMENT DATA AND PROJECTIONS

State of California

(Employment as of April 1)

Industry Group	1940		1950		Ultimate	
	No.	%	No.	%	No.	%
Total	2,475,581	100.0	3,902,278	100.0	16,965,000	100.0
Extractive	319,380	12.9	328,427	8.4	576,800	3.4
Agriculture	265,871	10.7	286,642	7.3	480,000	2.8
Forestry and fisheries	7,617	0.3	11,477	0.3	12,000	0.1
Mining	45,892	1.9	30,308	0.8	84,800	0.5
Manufacturing	415,721	16.8	763,680	19.6	3,817,100	22.5
Lumber and wood products*	40,195	1.6	69,167	1.8	135,000	0.8
Other manufacturing	375,526	15.2	694,513	17.8	3,682,100	21.7
All other	1,740,480	70.3	2,810,171	72.0	12,571,100	74.1
Sum of percentages, agriculture plus lumber and wood products		12.3		9.1		3.6

\* As defined in Standard Industrial Classification Groups 24 and 25. Pulp, paper and allied products (S.I.C. Group 26) are included in "other manufacturing" according to Census Bureau practice. Employment in pulp, paper and allied products at ultimate development is estimated at 18,000.

Employment data and projections for the 15 counties are presented in Tables 38-53.

Because of its relatively small development of manufacturing industries (except for lumber and wood products manufacture in the mountain counties), its high proportion of rural population and large dependence on agriculture, the proportion of total employment provided by manufacturing in the 15-county area as a whole has been well below the state and national percentages. In April 1950 manufacturing in the northeast counties provided only 15.8 percent of total employment there and accounted for only 2.4 percent of all manufacturing employment in the state. The lumber and wood products industries provided more than 70 percent of all April 1950 manufacturing employment in the 15 counties, and most of this was in the mountain counties.

As California's population and economy expand, population and manufacturing industries also will expand in the 15-county area, and the pattern of economic and industrial development of the area should become more like that of the state and nation. The area has a number of strategic economic transfer points for land, water and air transport and centers of potential industrial development, particularly in Shasta, Tehama, Butte, Yuba and Yolo counties.

If the population of California approaches or exceeds the mean projection of 26,750 000 in the year 1990 shown in Table 8, it can reasonably be expected that the pressures for further economic and population growth, plus the large natural resources, potential economic advantages and attractions of



these areas for human living, will induce a relatively large development of manufacturing and other economic activities in the northeastern county area during the years 1990-2050. Manufacturing is expected to account then for about 17 percent of total employment.

### 3. Proportion of Employment Provided by Agriculture and Lumbering

As noted before, approximately two-thirds of the population of the 15-county area today is supported, directly and indirectly, by agriculture and the timber industry. Likewise, two-thirds of the population today is rural. This stage of development is comparable to that of the state in 1870 (Table 3).

(This analysis assumes conservatively that for every person employed in agriculture and lumbering there is at least one person employed in distribution and service activities related to the handling of farm and timber products and the provision of food, clothing, shelter and services to the population engaged in producing these commodities. This is a multiplier effect of 2:1. Generally, in the state and national economy, the employment in distribution and services generated by a given volume of employment in basic commodity producing industries is seldom less than 1.5 times the latter, or a multiplier effect of 2.5:1).

By 1950 the economic development of the State of California had progressed to the point where only about one-sixth (17.4 percent) of its 10,586,223 population was economically dependent on agriculture and the manufacture of lumber and wood products. The other five-sixths were supported by other sources of employment and income. Eighty percent of the 1950 state population was classed as urban.

By the time of ultimate development (years 2020-2050) it is estimated that the state will have a population of 45,000,000 of which only about one-fourteenth (7.2 percent) will be dependent (either directly or indirectly) on agriculture and the manufacture of lumber and wood products.

For the northeastern county area as a whole, however, the estimates of employment and population at time of ultimate development (years 2020-2050) show that about one-fourth of the area's 1,750,000 population will still be economically dependent on agriculture and the manufacture of lumber and wood products and that about 30 percent of the population will still be classed as rural.

In effect, the pattern of economic development and urbanization of the population of the 15-county area as a whole at time of ultimate development of its natural resources is estimated to be somewhat similar to that of the State of California in 1940 when 25 percent of state population was dependent directly or indirectly on agriculture and the manufacture of lumber and wood products, and 29 percent of state population was still rural.



(In the 15-county area the estimated percent of ultimate total employment in agriculture and wood products manufacture combined is 12.8 percent, while the corresponding 1940 percent for California was 12.3).

In the 60 years 1880 to 1940, employment in the resource-based industries of agriculture and the manufacture of lumber and wood products in California increased by 143 percent -- from an estimated 126,000 in 1880 to 306,000 in 1940. The proportion of total California employment provided by these two industry groups, however, declined from 33.4 percent in 1880 to 12.3 percent in 1940 (Table 3).

During the same period the total population of California increased by 699 percent -- from 864,694 in 1880 to 6,907,387 in 1940. Thus, the rate of total population growth was 4.9 times the rate of increase of employment in the two resource-based industries.

In April 1940 the proportion of total civilian employment in the 15-county area provided by these two industry groups was 38.6 percent. By April 1950 it had declined to 33.5 percent, practically the same proportion as that for the State in 1880.

Also during the ten years April 1940 -- April 1950, employment in the two industry groups in the area increased 17.4 percent while the total population of the area increased 32.5 percent, or 1.87 times as fast.

The sum of the estimates of employment in agriculture and in the manufacture of lumber and wood products (excluding pulp and paper) in the individual counties of the 15-county area at time of ultimate development equals 82,190, an increase of 111 percent over the April 1950 employment in these industries.

The estimated total population of the individual counties of the 15-county area at time of ultimate development is 1,750,000. This is an increase of 430 percent over the 1950 population. It also represents 3.9 times the estimated rate of the increase (from 1950 to ultimate development) of employment in agriculture and the manufacture of lumber and wood products in the area.

A rate of population increase equal to 3.9 times the rate of increase of employment in the two resource-based industries may appear high, but examination shows that:

- (a) It is less than the population growth rate of 4.9 times the rate of employment increase in these two industries in California during the 60 years 1880 - 1940 cited above.
- (b) It is below the rate of 4.45 times the rate of employment increase in the same two industries estimated for the growth of California population from 1950 to the same date of ultimate employment.\*

---

*	State population increase:	$\frac{45,000,000}{10,586,000}$	=	325 percent
	State employment increase in agriculture and lumber and wood products	$\frac{615,000}{355,800}$	=	73 percent
		$\frac{325}{73}$	=	4.45 times

- (c) Continuation of the relative growth rates of population and of employment in the two industries for the period 1940-1950 would alone produce a population increase of 200 percent in the area from 1950 to ultimate development.

4. Relation of 15-county Population Growth to that of U.S.

Population in the 15 counties has in recent decades grown relatively faster than population in the United States as a whole. If the trend of relative growth shown in the period 1920-1950 is projected to year 2050, it yields population figures for the 15 counties which closely support the 1,750,000 estimate made by quite independent methods, which are explained in the following section of the report.

On the low side, the trend for 1920-1950 may be used. (This is low because of the relatively small population increase in the 15 counties during the 1920's). Over the three decades, 15-county population increased from 0.154 percent of U.S. Population to 0.219 percent, an average increase per decade of 0.0217 percentage points.

If this average increase is projected over 10 decades to year 2050, the 15-county population would be 0.436 percent of U. S. population. The latter is estimated at 375,000,000 (Table 7). The resulting estimate for the 15 counties is 1,635,000.

On the high side, the faster growth trend of 1930-1950 shows an average increase of 15-county population, as a percent of U. S. population, of 0.0285 percentage points per decade. Projecting this increase over 10 decades to year 2050 indicates that 15-county population would then be 0.504 percent of U. S. population. This indicates a 15-county population of 1,890,000.

The average of the low and high estimates is 1,762,500.

#### Extent of in-migration

A population of 1,750,000 in the 15-county area in year 2050 implies an average net in-migration of approximately 5,000 per year during the years 1950-2050. This would be about the same as annual net in-migration into the area during 1940-1950, which is indicated below:

Total population increase, 1940-1950:	<u>81,100</u>
Total natural population increase, 1940-1950 (60,866 births minus 30,940 deaths)*	approx. 30,000
Total net in-migration, 1940-1950:	51,100
Total net in-migration per year, 1940-1950:	5,100

---

\* State Department of Public Health

#### IV. METHOD OF ESTIMATING ULTIMATE EMPLOYMENT AND POPULATION IN NORTHEASTERN COUNTIES

##### A. Summary

Basically, the estimates of employment and population in the north-east counties at ultimate development were developed from detailed study of present and potential ultimate development of agricultural lands and water, mineral, forest, and recreation resources of each county (and of the northeastern county area as a whole) similar to the analysis in State Water Resources Board Bulletin No. 2 and the State Division of Water Resources Report on Upper Feather River Service Area. However, statistical techniques used in translating estimates of ultimate development of natural resources into estimates of population and employment differ from those in the foregoing reports.

Trends and patterns of economic development and population growth of the 15-county area as a whole were analyzed and projected to the period of ultimate development (years 2020-2050) based on potential development of the natural resources of the area, the projected growth of the state and national populations, and expected changes in employment patterns of the state and the 15-county area in light of established long term trends.

Estimates of major land uses, employment and population were then prepared for each county on the basis of its physical and economic characteristics, potential development of its natural resources, and past and expected patterns and trends of its growth and development in relation to those of the 15-county area and the state as a whole.

The aggregates of the estimates for the individual counties are consistent with the magnitudes of population and employment projected separately for the entire area.

#### Framework of Estimates

The estimates for the northeast counties were developed within a framework of population projections for the United States (375,000,000) and California (45,000,000) in the year 2050. These projections were developed as described in Section C of this chapter, entitled "Projections of the Populations of the United States and California to the year 2050".

The county projections are also based on certain assumptions about the probable relation between population and employment expected to prevail in the state and in the 15 northeastern counties at ultimate development. The determination of this relationship (i.e., the ratio of employed population to total population) is an essential step in estimating population growth based on development of local resources. The data and assumptions used in computing this ratio for the state and 15 counties are discussed in Section D entitled "Estimation of Ratio of Total Employment to Total Population at Time of Ultimate Development".



Estimates of the distribution of employment of county residents among various industries at ultimate development were guided by long-term trends of changes in employment patterns in the United States and California described in Section E entitled "Distribution of Employment, United States and California, 1870 - 1950, with Projections".

Estimates of ultimate agricultural development and ultimate April 1 employment in agriculture and the timber industry in each of the 15 counties were developed from estimates of potential ultimate irrigable acreage and sustained timber yields in each county, provided by the Department of Water Resources and the U. S. Forest Service respectively (See Sections F and G).

All estimates and projections as to ultimate development presented in this report are predicated on the assumptions concerning future technologic, economic and demographic conditions and trends described under "Assumptions about Living Conditions in 2050" (Section B).

#### County Factors Considered in Preparing Estimates

The County estimates at ultimate development also are based on study and appraisal of the following specific factors and conditions for each county:

1. Physical Factors

a. Land Use

Present and estimated ultimate acreages of land in each of the following categories:

Total gross area

Water surface area

Barren and wasteland

Forest land

Agricultural land - total and irrigated

Institutional and public use

Urban areas

b. Physiography

Approximate area of:

Flat or relatively level land

Rolling or foothill land suitable for human habitation and scattered rural population

Steep or mountainous terrain with little or no permanent population

Recreation areas suitable for permanent settlement

Number and locations of present and potential urban communities, approximate acreage available at each location for future urban development (if such acreage would impose limitations on size of urban population), including consideration of:

Railroads and highways serving each such area; especially junction points for rail and highway transport.

Proximity or distance of such communities from other urban communities and from large recreation areas.

Favorable or adverse climatic conditions in different sections of county, and other physical conditions for living in various parts of county.



## 2. Economic and Demographic Factors

General nature and pattern of economic and population growth expected to be realized at ultimate development of county resources based on appraisal of:

Extent and inter-relationships of the various types of ultimate land use and of the established pattern of land ownership.

The geographical location of the county and its present and probable ultimate function and economic position in the 15-county area and the state as a whole.

The direction, rate, and nature of trends in economic development and population growth in the county, the 15-county area and the state.

The relative desirability and attractions of the county and various areas within it for human living and for particular types of economic and recreational activity at ultimate development, including its industrial location factors and advantages.

Locations of principal industrial, distribution and service centers (present and probable ultimate), including consideration of ultimate gross habitable area tributary to such economic foci and trading centers. This was useful in estimating ultimate amount and percent of distribution and service employment ('Other Employment' in the tables) based on size of population served from trading centers in county (or contrariwise from other centers outside the county).

Probable degrees of concentration and dispersion of lumber and wood products industries in the county. (The greater the expected concentration of such industries in one or two localities, the greater the probable development of supplier and related industries and of other types of manufacturing).

Present and probable ultimate percentage distribution and relative densities of rural farm, urban and rural non-farm populations of the county derived from analysis of the previously described physical factors and the trends of these percentages and densities in the 15-county area and the state.

Estimates of the numbers and percentages of county residents employed as of April 1 at ultimate development in agriculture and in the manufacture of lumber and wood products were then established from detailed studies of ultimate development of agricultural and forest resources and the previously determined pattern and trends of economic growth.

#### B. Assumptions about Living Conditions in 2050

The projections of population and employment presented in this report have been developed in a framework of assumptions about conditions of human living in the United States and California in the year 2050 (selected to represent probable "ultimate" or full development of the northeastern counties' resources). These assumptions are:

1. Disparities in income levels among the regions and areas of the United States will have been largely eliminated by 2050 and median incomes of the population will be approximately the same among the regions and states.
2. Median family income of the populations of the U. S. and of California will be more than double the current median (in equivalent purchasing power of 1956 dollars).
3. New sources and applications of energy will be developed and widely used along with new and unpredictable types of materials, products, distribution methods and services, including transportation facilities and communication media.

4. Automation will have greatly reduced the amount of human effort required for production of materials and tangible goods. The average week of gainful labor at scheduled tasks will be about 24 or 25 hours (compared to about 38 hours in 1956).

5. The location of population and economic activity will be determined to a greater extent by the economic advantages of various localities, including the relative desirability and attractiveness of physical environments for human living and working, than by the local availability of natural resources and the currently used natural sources of energy.

6. Population and economic activity in the U. S. and California, therefore, will be much more widely diffused than they are in 1956. Maximum gross residential densities in cities and metropolitan areas will be substantially reduced below the current (1956) maximum densities, but average gross residential densities for the state and nation will be greatly increased.

7. Through progress in science and medicine, the average life span will be lengthened, and the proportion of the population ages 60 and over will be substantially larger than in 1950. Practically all people aged 60 years and over will have acquired life incomes permitting them to select and live in environments most attractive to them.

Applying these assumptions to the northeastern counties, it is expected that technological developments in transportation and communication will increase the accessibility of the area to all parts of the state and nation, and will make it feasible for many persons to reside in the area while carrying on their business elsewhere. These developments will also induce the establishment of many types of specialized activities not dependent on natural resources of the area.

The recreation resources of the area, together with increased leisure time for the population generally, will draw to it many outside visitors, and a substantial number of persons who will live in the area solely because of its facilities for "good living" and leisure-time activities. Hence, the northeastern county area will contain a relatively large part-time or vacation population not dependent on employment in the area. The proportion of retired people in the 15-county area also may be somewhat higher than for the state as a whole.

In view of these prospects the potential population of the area at ultimate development is much larger than the present economy and developed resources of the area would indicate.

All estimates and projections at time of ultimate development assume that no major disaster, such as a devastating war, epidemic or other catastrophe, will occur during the period of the projection.

### C. Projections of the Populations of the United States and California to the Year 2050

#### Need for the Population Projections

The levels of population and economic development in California are influenced by and closely related to those of the nation. In turn the size of the population and the extent and nature of economic development in the 15 counties are affected by and related to the size of the state and national populations.

Hence, the first step was to determine the probable size of the populations of the United States and of California at the time of ultimate development of the natural resources of the 15 counties. For reasons presented elsewhere in this report, the year 2050 has been taken as the approximate date of such ultimate development.

#### Assumptions and Procedures in Projecting Populations of the United States and California to the Year 2050

The sizes of the populations of the United States and of California in the year 2050 are subject to wide variations because of the many factors that may accelerate or retard population growth. The most logical approach to the problem was judged to be (a) determination of the range within which the population can be expected to vary in the year 2050 and (b) adoption of a figure near the middle of this range.

Probable high and probable low projections of the total populations of the United States and California in the year 2050 therefore were developed as described below and shown in Tables 7 and 8.

Assumptions with respect to future economic and social trends and conditions on which the projections have been based are set forth in the preceding section of this report.

1. Projections of the Population of the United States.

High Projections

For 1960, 1965, 1970 and 1975, the high projections in Table 7 are the highest of a series of projections of the total population (including armed forces overseas) for those dates published by the Bureau of the Census in its current Population Reports, Series P-25, No. 123, October 20, 1955. The low projections in Table 7 for those dates are the lowest of the Bureau of the Census projections in the same report.

For 1990, the high projection of 270,000,000 developed in 1954 by the engineering firm of Parsons, Brinckerhoff, Hall and Macdonald in a study of population growth in the nation, California, and the San Francisco Bay Area was adopted. This 1990 high projection is 60,620,000 more than the 1970 high projection of 209,380,000 by the Bureau of the Census. It represents an average increase of 3,031,000 per year for that 20 year period, or 30,310,000 per decade.



The high projections for the census years 2000 to 2050 are straight line arithmetical projections based on an assumed average increase of 3,000,000 per year over the entire 60 year period, 1990-2050. The assumption of an average population growth of 3,000,000 per year appears conservative for a high projection of the national population for the following reasons:

- (a) It represents a gradual decline in the average crude rate of natural increase from approximately 14.9 per thousand population during the five years 1950-55 to approximately 9.8 per thousand population for the five years 1990-95 and approximately 6.7 per thousand population in the five years 2045-50. These future crude rates of natural increase and the population projections based thereon might be exceeded if age-specific fertility rates and mortality rates were maintained at about their current levels, despite the larger proportions of older people in the projected future populations.
- (b) A report published in November 1952 by the Federal Security Agency \* shows a high projection of 392,289,000 for the population of the entire United States (including territorial possessions) in 2050. This projection, however, does not reflect the large population increase which has

---

\* Illustrative United States Population Projections 1952, Robert J. Myers and E. A. Razor, Actuarial Study No. 33, Federal Security Agency, November 1952.

already occurred during 1950-56. The high projection in that report for 1975 is 200,923,000 which is about 28,000,000 less than the more recent 1975 high projection by the Bureau of the Census shown in Table 7. Moreover, the high projections by the Federal Security Agency assume a large reduction in age-specific fertility rates after 1960.

- c. The potentialities for continuous advancement in medical science, in productivity per man-hour of labor and in the general plane of living, with consequent lowering of mortality rates, make a high projection of 450,000,000 population for the United States in the year 2050 seem not excessive.

### Low Projections

The low projections for 1960, 1965, 1970 and 1975 in Table 7 are the lowest of the series of projections by the Bureau of the Census in the report previously cited.

The 1980 projection of 215,000,000 was obtained by adding an assumed increase of 8,093,000 to the Census Bureau's 1975 low projection of 206,907,000. This represents an average increase, 1975-80, of 1,618,600 per year - which is less than the average increase of 2,107,400 per year for the five years 1970-75 and the 2,030,300 average annual increase for the 15 years 1960-75, shown by the Census Bureau's low projections.

The low projections for the census years 1990 to 2050 were obtained by adding gradually decreasing annual increments of population growth, based on an assumed gradual decline in age-specific fertility rates to the prewar level of 1940 and practically no change in age-specific mortality rates.



It may be argued that the low projection of 300,000,000 is too low a figure for the population of the United States in the year 2050. However, the Federal Security Agency report cited before shows a low projection of only 225,525,000 population in 2050.

As an aid in determining the population of California in 2050, the potential range for the national population in that year shown in Table 7 appears reasonable.

## 2. Projections of the Population of California

High and low projections showing the expected size range of the population of California in the year 2050 (Table 8) were developed by:

- (a) Extending to the year 2050 the high and low projections of the state's population published by the State Department of Finance for 1960 and 1965 and the high projection for 1990 made by the firm of Parsons, Brinckerhoff, Hall and Macdonald.
- (b) Computing the percentages of the high, low and mean population projections for the United States represented by the corresponding projections of the California population (as developed by procedure (a) above in each census year 2000 to 2050 to determine whether the trends and amounts of these future percentages were consistent and reasonable in light of past relationships of population growth in the two areas.

The high projections for the population of California in the census years 2000 to 2050 assume a gradual decrease in annual growth from 500,000 per year during 1990-2010 to 400,000 per year during 2040-2050. These average annual increases are less than the estimated average during the five years 1950-55 and also well below the 560,000 annual average for the 20 years 1970-90 shown by the Parsons, Brinckerhoff, Hall and Macdonald high projections.

If future age-specific fertility and mortality rates are approximately the same as those assumed for the high projections of the national population (which appears to be a reasonable assumption for the high projections of the California population), the high projections in Table 8 represent a gradual decline of the average annual net migration into California from about 300,000 during 1950-60 to about 40,000 during 2040-50. Consequently, the high projections in Tables 7 and 8 represent a consistent and reasonable decline in the differential between rates of population growth in the nation and in California. This is shown by the trend of the percentages of U. S. population represented by the high projections of California population for the census years 1950-2050 in Table 8.

The low projections of the population of California in the census years 2000-2050 assume a gradual decline in both the rate and amount of population increase in each decade after 1990. The low projections are based on the assumption that net migration will steadily decline

from about 125,000 per year during 1990-2000 to zero during 2040-50 and also that age-specific fertility rates will decline at approximately the same rate in California as that previously assumed for the low projections of the national population in the decades 2000-2050.

Average crude rates of natural increase during the five years 2045-50 for the low projections of the national and state populations are both approximately 3.5 per thousand population.

### Conclusion

In effect, the high and low projections in Tables 7 and 8 represent reasonable upper and lower limits for the populations of the United States and California in the year 2050. Because it is impossible to predict whether the population of California in 2050 will be closer to the upper or to the lower limit of the indicated potential range, the figure adopted for this study is the mean of 45,000,000 between the high of 58,000,000 and the low of 32,000,000.

On the basis of the foregoing analysis, it is estimated that California will have a population of approximately 45,000,000 at the time of "ultimate" or full development of natural resources in the northeastern counties. It also appears possible that this population figure might be reached at any time after the year 2020.

### Comparability with Other Estimates

The 45,000,000 estimate derived by the foregoing analysis is only 2,590,000 larger than the estimate of 42,410,000 for probable ultimate state population developed by a different method by the State Division of Water Resources and published in State Water Resources Board Bulletin No. 2, Volume 1, June 1955, page 220.

The projection is quite close to the 45,800,000 estimate for California population in 2050 developed by the Bureau of Reclamation, Region 2, and published in its "Guide for Forecasting Population Growth," October 1954, page 9. The Bureau estimate for U. S. population in 2050 is 381,700,000, compared with 375,000,000 in Table 7.

Also in Table 7, the estimate of 272,500,000 for United States population in year 2000 compared with an estimate of 273,000,000 for that year prepared by Stanford Research Institute in its 1954 report to Weyerhaeuser Timber Company, "America's Demand for Wood 1929-1975."

Table 7

POPULATION OF THE UNITED STATES 1900-1950  
WITH ESTIMATES AND PROJECTIONS TO 2050

Year	Population
1900	75,994,575
1910	91,972,266
1920	105,710,620
1930	122,775,046
1940	131,669,275
April 1, 1950	151,132,000 (incl. armed forces overseas)
July 1, 1955 <sup>a/</sup>	165,271,000 " " " "
July 1, 1956 <sup>a/</sup>	168,091,000 " " " "

Projections	High	Mean	Low
July 1			
1960 <sup>b/</sup>	179,358,000	177,905,000	176,452,000
1965 <sup>b/</sup>	193,346,000	189,818,500	186,291,000
1970 <sup>b/</sup>	209,380,000	202,875,000	196,370,000
1975 <sup>b/</sup>	228,463,000	217,685,000	206,907,000
1980	239,000,000	227,000,000	215,000,000
1990	270,000,000 <sup>c/</sup>	250,500,000	231,000,000
2000	300,000,000	272,500,000	245,000,000
2010	330,000,000	293,750,000	257,500,000
2020	360,000,000	314,500,000	269,000,000
2030	390,000,000	335,000,000	280,000,000
2040	420,000,000	355,000,000	290,000,000
2050	450,000,000	375,000,000	300,000,000

<sup>a/</sup> Estimated by the Bureau of the Census, Current Population Reports, Series P-25, No. 141, August 10, 1956.

<sup>b/</sup> High and low projections from Bureau of the Census, Current Population Reports, Series P-25, No. 123, October 20, 1955. Mean projections are the arithmetical means between the high and low projections and are not those of the Bureau of the Census.

<sup>c/</sup> 1990 high projection by Parsons, Brinckerhoff, Hall and Macdonald.

Table 8

POPULATION OF CALIFORNIA 1900-1950  
WITH ESTIMATES AND PROJECTIONS TO 2050

Year	Population	California Percent of United States
1900	1,485,053	1.95
1910	2,377,549	2.59
1920	3,426,861	3.24
1930	5,677,251	4.62
1940	6,907,387	5.25
April 1, 1950	10,586,223	7.00
July 1, 1955 <sup>a/</sup>	13,035,000	7.89
July 1, 1956 <sup>a/</sup>	13,600,000	8.09

Projections	High	Mean	Low	California High	Percent of U. S. Mean	Low
July 1						
1960 <sup>b/</sup>	15,413,000	15,011,000	14,609,000	8.59	8.44	8.28
1965 <sup>b/</sup>	17,781,000	17,100,000	16,419,000	9.20	9.01	8.81
1970	20,000,000 <sup>c/</sup>	18,800,000	17,600,000	9.55	9.27	8.96
1980	25,600,000	22,900,000	20,200,000	10.71	10.09	9.40
1990	31,200,000 <sup>c/</sup>	26,750,000	22,300,000 <sup>c/</sup>	11.56	10.68	9.65
2000	36,200,000	30,200,000	24,200,000	12.07	11.08	9.88
2010	41,000,000	33,500,000	26,000,000	12.42	11.40	10.10
2020	45,500,000	36,650,000	27,800,000	12.64	11.65	10.33
2030	49,800,000	39,600,000	29,400,000	12.77	11.82	10.50
2040	54,000,000	42,400,000	30,800,000	12.86	11.94	10.62
2050	58,000,000	45,000,000	32,000,000	12.89	12.00	10.67

<sup>a/</sup> From California's Population in 1956, State Department of Finance, July 1956.

<sup>b/</sup> High and low projections are from Projected Population of California by Broad Age Groups, 1956-1966, State Department of Finance, September 1955.

<sup>c/</sup> High projection for 1970 and the high and low projections for 1990 are those developed by Parsons, Brinckerhoff, Hall and Macdonald for their report, Regional Rapid Transit, to the San Francisco Bay Area Rapid Transit Commission, January 1956.



D. Estimation of ratio of total employment to total population at time of ultimate development

The proportion of the population of an area that is gainfully employed on a particular date is determined by:

1. The percentage of that population which is in the working age group 14 years and older.
2. The percentage of that working age population which is in the labor force (i.e. persons actually employed or seeking work. This percentage is known as the labor force participation rate).
3. The percentage of the labor force that is gainfully employed.

The ratio of total employment to total population therefore is equal to percentage 1. multiplied by percentage 2. multiplied by percentage 3.

Assumptions Concerning Future Characteristics of County Populations.

In the past, the populations of most of the 15 northeast California counties have shown:

1. A higher sex ratio (i.e., number of males per 100 females) than for the nation and state.
2. Larger proportions of children ages 0-14 years than the averages for the nation and state.

The long-term trends of the sex ratios and age distribution in the 15 counties, however, have been to diminish their differentials in these respects from the national and state averages.



Hence by the time of ultimate development (2020-2050) it can reasonably be expected that the age distribution and sex composition of the populations of most of the 15 northeast counties will have become about the same as the age-distribution and sex composition of the national and state populations at that future date.

Some of the 15 northeast counties, for example, the counties of Lake, Plumas, Lassen, and Sierra, because of their potential attractions for retired elderly persons, may have relatively high proportions in the age group 65 and over with consequently smaller percentages of their working populations in their labor forces. The effects of these two deviations from the average for the nation, state and other northeast counties would tend to be offsetting. The larger percentage in the age group 65 years and over would increase percentage 1. but the greater proportion of retired persons would tend to reduce percentage 2. Hence, in computing the overall ratio of employment to population, it has been assumed that the age distribution and sex composition for each of the 15 counties at ultimate development will approximate the averages for the national and state populations.

#### Estimation of Percentage 1. at Ultimate Development

The percentages of the civilian populations of the United States, California and the 15 northeast counties in the working age group 14 years

and over in the years 2020-2050 should be larger than in April 1950 because there will then be smaller percentages in the child age groups and higher percentages in the older age groups 65 years and over. A series of population projections for the entire United States by the Federal Security Agency to 2050 shows a probable decline of 2-1/2 to 4 percentage points from 1950 to 2050 for children ages 14 and younger and a rise of 4-1/2 to 7 percentage points for the age group 65 years and over.<sup>1/</sup>

On the other hand, the active working age group 20-64 years which contains most of the gainfully employed will probably decline from 57.5 percent of the total U. S. population in 1950 to 56 or 55 percent by 2050.

Again, these changes in the age distribution of the population may have offsetting effects on the ratio of total employment to total population. The decline of the proportion of the population in the most active working ages will tend to lower the ratio, while the larger proportion in the elderly ages may tend to raise it.

In view of the population projections to 2050 by the Federal Security Agency, cited above, the expected range of the age distribution of the populations of California and the 15 northeast counties in 2020-2050 is as follows:

---

<sup>1/</sup> Illustrative United States Population Projections 1952, by Robert J. Myers and E. A. Razor, Actuarial Study No. 33, Federal Security Agency, November 1952. Population figures in this report include the populations of Alaska, Hawaii, Puerto Rico, Virgin Islands and U. S. armed forces and civilians overseas.

PROBABLE RANGE OF AGE DISTRIBUTION OF THE POPULATION  
OF CALIFORNIA AND THE 15 COUNTIES IN 2020-2050 1/

<u>Age Group</u>	<u>Probable Range</u>
0 - 14 years	23 - 25 percent
15 - 19 years	7 - 8 percent
20 - 64 years	56 - 55 percent
65 years and over	<u>14 - 12 percent</u>
	100 - 100 percent

Another prospect of significance for this study is that the current downtrend of the sex ratio of the national population may be halted and begin to reverse itself between 1975 and 2000 with the result that the sex ratio will be higher in 2020 and 2050 than it was in 1950. The four series of population projections for the entire United States to 2050 published by the Federal Security Agency in 1952 each assumes that the current relative superiority of female over male mortality will decrease in the future (although absolute improvement is shown for both sexes). It is recognized that in the past the gap has been widening so that this assumption is contrary to a projection of past trends but is thought to be the most reasonable assumption. 2/

1/ Based on projected age distributions of United States population in Federal Security Agency study cited above.

2/ Quoted from Federal Security Agency study, pages 32 and 33.

Hence, it seems likely that the sex ratios of the populations of the United States, California and the 15 northeast counties will be close to unity by the years 2020-2050. In other words the number of males will then be approximately equal to the number of females.

#### Estimation of percentage 2. at ultimate development

The next question is: In what direction and to what extent will changes occur in percentage 2, i. e., the rate of labor force participation of the working age population? Will the anticipated higher income level and assured lifetime income of the elderly reduce their propensity to seek gainful employment, or will their improved health and increased vitality and longevity (through expected advancements in medical science) together with the expected greater opportunities for non-arduous labor and a desire of the aged to perform such remunerative service to society raise their labor force participation rate?

On this point, a recent report by the Bureau of the Census <sup>1/</sup> projects a decline in the labor force participation rate of males ages 65 and over in the national population from 44.7 percent in 1950 to 36.5 percent in

---

<sup>1/</sup> Bureau of the Census, Current Population Reports, Labor Force, Series P-50, No. 42, December 10, 1952, Table 1 (A Projected Growth of the Labor Force in the United States under Conditions of High Employment: 1950-1975).

1975. This is a drop of 8.2 percentage points for those 25 years. The same report, however, projects a slight increase from 8.9 percent in 1950 to 9.5 percent in 1975 in the labor force participation rate for females ages 65 and over in the national population.

The same Census Bureau report also projects an increase from 57.3 percent in 1950 to 59.1 in 1975 in the labor force participation rate of the whole national population ages 14 years and over. The projected rate for males ages 14 years and over drops from 83.3 percent in 1950 to 80.6 percent in 1975, but the rate for females ages 14 years and over rises from 31.3 percent in 1950 to 37.5 percent in 1975.

A writer on California employment trends has noted:

"In the past there has been a close relationship between the working age population (assumed here for convenience to be 15-64 years) and civilian employment in California. However, the employed portion of California's population has been declining gradually with time, as it has been in the nation as a whole. In 1880, about 60 percent of California's working age population was employed; by 1950, this ratio had dropped to about 55 percent. If this trend continues, the ratio will be about 53 percent in 1970."<sup>1/</sup>

---

<sup>1/</sup> Richard C. Singleton in Growth and Changes in California's Population, by Warren S. Thompson, The Haynes Foundation, Los Angeles, 1955, page 296.

In view of the much higher level of the population, assured life incomes for most of the elderly group, and the smaller percentages of total employment in extractive activities expected during 2020-2050, it seems likely that current definitions and statistical relationships between population, labor force, and employment will have become outmoded by those dates and new concepts, definitions and relationships will have emerged. Especially it seems probable that the labor force will then be divided into two groups, one representing persons engaged in or seeking regular full time employment and the other representing those who desire and will accept only intermittent or part-time employment, devoting the rest of their time to non-remunerative activities.

But since it is necessary to estimate future employment, labor force and population on the basis of current definitions and relationships, the following assumptions appear logical and reasonable for the purposes of this study. It is therefore assumed that by 2020-2050:

1. The proportions of youths ages 14-19 in the labor forces of California and the nation will be much smaller than in 1950 because their educational period should then be materially lengthened. The minimum age for gainful employment will almost certainly be raised from 14 to 16 years and the labor force participation rates in the 15-19 year age bracket will probably not exceed 25 percent for males and 12 percent for females (see Table 9, Section A).



2. The labor force participation rates for males ages 20-64 years in California and the nation will have declined to 87-85 percent; for females ages 20-64 years it will range between 44 and 40 percent.

3. The labor force participation rate of males ages 65 years and over will have declined to 28-25 percent and the rate for females will range from 10 to 8 percent.

These assumptions then were applied to the projected range of the age distribution of the population in 2020-2050 as shown in the statistical analysis in Table 9, Section B.

In accordance with the previously described trend in sex ratios, it is also assumed that the sex ratio of the California population in 2020-2050 will be unity (i.e., equal numbers of males and females).

With these assumptions, the labor force participation rate of the population of California ages 15 years and over in 2020-2050 will range between 70.7 - 68.6 percent for males and between 34.9 - 34.6 percent for females. For males and females together the range is 52.8 - 51.6 percent (Table 9, Section A).

For the total population of California in 2020-2050 the projected range is 54.4 - 51.4 percent for males and 26.9 - 26.0 percent for females.



Table 9

COMPUTATION OF PERCENTAGES OF TOTAL POPULATION IN  
THE LABOR FORCE AND EMPLOYED IN CALIFORNIA 2020-2050

A. Percent of population 14 years old and over in April 1 labor force, United States and California

	<u>United States<sup>1/</sup></u>		<u>... California... Range</u>	
	<u>1950</u>	<u>1975</u>	<u>1950<sup>2/</sup></u>	<u>2020-2050</u>
<u>Males:</u>				
14 - 19 years	48.9	43.7	39.0	25.0 - 21.0 <sup>3/</sup>
20 - 64 years	93.8	93.2	89.2	87.0 - 85.0
65 years and over	44.7	36.5	32.4	28.0 - 25.0
14 years and over, total	83.3	80.6	78.2	70.7 - 68.6
<u>Females:</u>				
14 - 19 years	27.4	26.3	19.7	12.0 - 10.0 <sup>3/</sup>
20 - 64 years	35.7	45.8	35.9	44.0 - 40.0
65 years and over	8.9	9.5	7.4	10.0 - 8.0
14 years and over, total	31.3	37.5	31.0	34.9 - 34.6
Average, male and female	57.3	59.1	54.1	52.8 - 51.6

B. Proportion of total population in April 1 labor force, California, 2020-2050

<u>Males:</u>		<u>High</u>	<u>Low</u>
15 - 19 years	=	.25 x .07 = .0175	.21 x .08 = .0168
20 - 64 years	=	.87 x .56 = .4872	.85 x .55 = .4675
65 years and over	=	.28 x .14 = .0392	.25 x .12 = .0300
		<u>.5439 (= 54.39%)</u>	<u>.5143 (= 51.43%)</u>
<u>Females:</u>			
15 - 19 years	=	.12 x .07 = .0084	.10 x .08 = .0080
20 - 64 years	=	.44 x .56 = .2464	.40 x .55 = .2420
65 years and over	=	.10 x .14 = .0140	.08 x .12 = .0096
		<u>.2688 (= 26.88%)</u>	<u>.2596 (= 25.96%)</u>
Average, male and female:		40.64 percent (high)	38.70 percent (low)

C. Percent of total population employed April 1, California, 2020-2050

Percent in labor force	40.64 percent	38.70 percent
Percent employed	<u>.96</u>	<u>.94</u>
Percent of whole population employed	39.01	36.38
Average equals	$\frac{39.01 + 36.38}{2} =$	37.7 percent

<sup>1/</sup> Data from Bureau of the Census, Current Population Reports, Labor Force, Series P-50, No. 42, December 10, 1952, Table 1 (includes persons in military service).

<sup>2/</sup> Data from 1950 Census of Population, Part 5, California, Table 69, page 5 - 269.

<sup>3/</sup> Age group 15 - 19 years in 2020-2050.

### Estimation of Percentage 3. at Ultimate Development

It is impossible of course to predict exact levels of employment and unemployment in 2020-2050. It may reasonably be assumed, however, that periods of economic recession will then be relatively short and of relatively small depth because of the advances that will doubtless be made in controlling fluctuations of economic activity in the future.

Since unemployment on April 1 (as now defined) generally averages about 4 percent in prosperous peacetime years, it seems reasonable to assume that unemployment in the nation and California in the period 2020-2050 will probably fluctuate between 4-6 percent. Hence it is assumed that from 96 to 94 percent of the labor force will be employed at the time of ultimate development.

### Summary: Percentage 1 x Percentage 2 x Percentage 3

Finally, therefore, the estimated range of the ratio of total April 1 employment to total April 1 population in California in 2020-2050 is as follows:

<u>Estimated Range of Percentages in 2020-2050</u>	<u>High</u>	<u>Low</u>
Percent of total population ages 15 years and over (Percentage 1.)	77.0	75.0
Percent of population ages 15 years and over in the labor force (Percentage 2.)	52.8	51.6
Percent of the labor force employed (Percentage 3.)	<u>96.0</u>	<u>94.0</u>
Ratio of total employment to total population	39.0	36.4(mean = 37.7)

### Employment Ratio for 15 Northeastern Counties

The ratio of total employment to total population in the 15 northeastern counties at time of ultimate development will probably be slightly below the 37.7 percent average developed above for California as a whole.

Reasons for this belief are:

1. The larger proportions of rural non-farm population and smaller proportions of urban population expected in the 15 counties than for the state as a whole.

2. The proportions of employment in extractive activities and in wood products manufacture are expected to be relatively larger in the 15 counties than the average for the state.

Labor force participation rates of the rural non-farm population in California are substantially lower for both males and females than the corresponding rates for the State's urban population. Comparative rates for April 1, 1950 are shown in the following table:

Percent of State Population, April 1, 1950		Percent of Population Ages 14 Years and Over in Civilian Labor Force California, April 1, 1950		
		Total	Males	Females
80.7	Urban	53.3	75.2	32.6
5.4	Rural Farm	54.7	83.0	19.8
13.9	Rural Non-Farm	45.2	64.2	22.0
100.0	Whole Population	52.3	74.0	30.7

Source: U. S. Census of Population: 1950, Volume II, Part 5, Chapter B, Table 25.

Since it seems likely that the rural non-farm population of the 15 northeastern counties at the time of ultimate development will comprise a considerably larger percent of their total population than the average percent for the state population; and because the rural non-farm population tends to have a relatively low labor force participation rate, it may be expected that the labor force participation rate for the 15 counties in 2020-2050 will be slightly below that for the state as a whole at that time.

Furthermore, larger proportions of total employment in the 15 northeastern counties are in the extractive activities and in wood products manufacture than the corresponding proportions for California as a whole, and male employment in these activities is relatively high while female employment in them is relatively low. Nine of the 15 northeastern counties had slightly higher labor force participation rates for males in 1950 than the California average of 78.2 percent.<sup>1/</sup> These nine counties were Colusa, Glenn, Lassen, Modoc, Plumas, Shasta, Siskiyou, Sutter and Tehama. Only one of the 15 counties (Plumas), however, equalled the national labor force participation rate of 83.3 percent for males in 1950; all the other counties had lower rates for their males of working age.

All 15 counties, however, had much lower labor force participation rates for their females of working age in 1950 than the 30.8 percent for the state and the 31.3 percent for the nation.

---

<sup>1/</sup> 1950 Census of Population, Vol. II, Part 5, Chapter B, Tables 10 and 12.

Hence, the labor force participation rate for the whole population of working age (males and females together) in the 15 counties generally was below the corresponding state and national rates in 1950. It should be noted also that the California rates for both males and females were slightly below the corresponding national rates in 1950. Part of this difference probably was due to the higher median income level of the California population, which freed relatively more of the state's population of working age from the necessity of gainful employment.

Another clue to the probable labor force participation rates of the northeastern counties in 2020-2050 may be found by examining the rates for Lake County in 1950. These rates were only 71.3 percent for the county's male population ages 14 and over and 24.1 percent for the female population of working age. For males and females together the rate was only 48.3 percent. The unusually low rates for Lake County in 1950 appear to have been due largely to the age distribution of the county's 1950 population, especially the very high proportion (14.7 percent) of persons ages 65 and over.

The sex ratio of the population of Lake County in 1950 was approximately 106 and the age distribution of the population was:

0-14 years	23.3 percent
15-64 years	62.0 percent
65 years and over	<u>14.7</u> percent
Whole population	100.0

The foregoing analysis indicates that the age distribution and labor force participation rate of the populations of the northeastern counties in 2020-2050 may approach that of Lake County in 1950. Hence, it may logically be reasoned that the labor force participation rate for the population ages 15 years and over in the 15 counties in 2020-2050 probably will not exceed 50 percent, and may be below that figure. This is below the estimated state average rate of  $\frac{(52.8 + 51.6)}{2} = 52.2$  percent in 2020-2050 (data from Table 9).

Assuming an average labor force participation rate of 50 percent of the population ages 15 years and over in 2020-2050, the ratio of total employment to total population in the 15 northeastern counties would be as follows:

$$\text{Percentage 1.} - 76 \quad \frac{(77 + 75)}{2}$$

$$\text{Percentage 2.} - 50$$

$$\text{Percentage 3.} - 95 \quad \frac{(96 + 94)}{2}$$

$$\text{Total Employment} - \underline{\underline{36.1}} \text{ percent of total population}$$

Hence, in making the population projections for the northeastern counties the ratio of April 1 employment to population at time of ultimate development has been generally assumed to be 36 percent. In applying this assumption to computations for individual counties, however, the percentage



has been varied to meet local differences. For Yolo County, which is expected to have a relatively high degree of urban and industrial development, the percentage is assumed to be 37.5 percent. In a number of other counties, especially Colusa, Glenn and Sutter, where farm employment is a relatively high proportion of total employment or is relatively high in comparison with farm population, the employment to population ratio of .36 was applied only to non-farm employment instead of to total employment. Lake County is assumed to have a relatively low ratio of employment to population.

For the 15 counties as a group, this procedure results in an average ratio of estimated April 1 employment to population at ultimate development of 36.6 percent. In the case of some counties, the difference between 36 percent and the figure shown in Table 10 is due to rounding of population estimates or employment estimates or both.



Table 10

EMPLOYMENT (APRIL 1) AS PERCENT OF POPULATION  
IN 15 NORTHEASTERN COUNTIES:  
ESTIMATES FOR ULTIMATE DEVELOPMENT, YEARS 2020-2050

	Population	Employment	Employment as Percent of Population
Butte	284,000	102,200	36.0
Colusa	68,000	26,500	39.0
Glenn	85,000	32,080	37.7
Lake	65,000	21,000	32.3
Lassen	67,500	24,930	36.9
Modoc	51,100	18,510	36.2
Plumas	44,700	16,080	36.0
Shasta	195,000	70,200	36.0
Sierra	16,000	5,750	35.9
Siskiyou	127,200	46,180	36.3
Sutter	121,800	47,180	38.7
Tehama	105,100	36,800	35.0
Trinity	22,000	7,925	36.0
Yolo	390,000	146,250	37.5
Yuba	105,000	37,750	36.0
Total	1,747,400	639,335	36.6

E. Distribution of Employment, United States and  
California 1870 - 1950 with projections

Purposes and Uses of Data in Tables 11 and 12

Tables 11 and 12 were prepared to show the directions and rates of shifts in the functional distribution of employment in the United States and California, by decades, 1870 - 1950.

These tables show clearly the continuous decline in both the United States and California of the proportions of employment provided by the extractive activities and the continuous rise in the proportions employed in "Other Employment" (i. e., in construction, distribution and service activities). Similar analyses for other states show the same general trends.

The universality of these long term trends in employment patterns provides the basis for projections of the distribution of employment in the northeastern California counties and for projections of total employment therein at the stage of probable ultimate development, including full utilization of their natural resources.

### Sources of Data in Tables 11 and 12

Percentage distribution of employment 1870 - 1950, was computed from data in Employment Expansion and Population Growth, The California Experience 1900-1950 by Margaret S. Gordon, University of California Press, 1954, especially Tables A-13, A-14, A-17, A-18, and A-19.

Percent of total employment in lumber and wood products manufacture was computed by multiplying percentages of total manufacturing production workers employed in lumber and wood products by the percentage of total employment engaged in manufacturing in the nearest census year (Tables A-18 and A-19 in Gordon report).

Percentage distribution in Table 12 for April 1956 was computed from data in Monthly Report on Employment and Unemployment in California, published by the State Departments of Employment and Industrial Relations.

## TRENDS IN FUNCTIONAL DISTRIBUTION OF EMPLOYMENT IN UNITED STATES

	1870	1880	1890	1900	1910	1920	1930	1940	1950
Total Employment	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Extraction	54.2	51.6	43.8	40.7	34.3	30.2	24.9	20.9	14.1
Agriculture	52.3	49.4	41.2	37.6	31.1	27.0	22.1	18.7	12.2
Forestry and Fishing	.4	.5	.7	0.7	0.6	0.6	0.5	0.2	0.2
Mining	1.5	1.7	1.9	2.4	2.6	2.6	2.3	2.0	1.7
Manufacturing	16.2	17.7	18.3	19.4	22.4	25.1	22.6	23.5	25.9
Lumber and wood products	3.6	3.5	3.3	3.1	3.5	2.6	2.4	2.0	2.1
Other manufacturing	12.6	14.2	15.0	16.3	18.9	22.5	20.2	21.5	23.8
Other Employment	29.6	30.7	37.9	39.9	43.3	44.7	52.5	55.6	60.0

Table 12

## TRENDS IN FUNCTIONAL DISTRIBUTION OF EMPLOYMENT IN CALIFORNIA

Industry Group	1870	1880	1890	1900	1910	1920	1930	1940	1950	Estimated April 1956	(Tentative) Ultimate Development 2020-2050
Total Employment	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Extraction	46.5	41.0	35.3	31.1	21.9	19.7	16.4	12.9	8.4	8.9	3.4
Agriculture	29.3	28.6	29.0	25.0	17.9	17.2	13.7	10.7	7.3	7.8	2.8
Forestry and fishing	1.7	2.1	1.7	1.4	1.2	0.8	0.6	0.3	0.3	.3	0.1
Mining	15.5	10.3	4.6	4.7	2.8	1.7	2.1	1.9	0.8	.8	0.5
Manufacturing	14.2	17.5	16.7	17.7	17.9	21.0	17.0	16.8	19.6	22.3	22.5
Lumber and wood products	4.6	4.8	3.5	3.1	3.2	2.8	1.8	1.6	1.8		0.8
Other Mfg.	9.6	12.7	13.2	14.6	14.7	18.2	15.2	15.2	17.8		21.7
Other Employment	39.3	41.5	48.0	51.2	60.2	59.3	66.6	70.3	72.0	68.8	74.1

## F. Estimation of farm population and employment

### Farms, farm population and employment

According to the projections made for this study, the number of farms in the northeastern counties at time of ultimate development will be approximately twice the present number. These farms will support roughly twice the farm population and farm employment reported in the 1950 Census of Population.

### Increase in Irrigated Acreage

This expansion is predicated upon full development of irrigation through the California Water Plan. The State Department of Water Resources estimates total net irrigable acres in the northeastern counties at 3,803,900. This is 3.5 times the irrigated acreage reported by the 1950 Census of Agriculture and 3.0 times that reported by the 1954 Census of Agriculture.

Total land in farms is not expected to change much from the present acreage; land in irrigated farms will be greatly increased while land in non-irrigated farms will be greatly decreased. Average size of farm will be reduced to about half the present figure.

Expansion of irrigated acreage will take place in part through additions to the irrigated acreage of existing irrigated farms, and in part through creation of entirely new farms on land made useful for cropland or pasture by irrigation.

### Reversal of trend toward larger farms

The projected increase in number of farms and in farm population and employment presumes a reversal of the present state-wide trend. In recent decades, increases in irrigated acreage have resulted largely in an increase in the average size of farms, rather than an increase in number of farms and farm population. For example, between 1930 and 1950 irrigated acreage in the state increased from 4.7 million to 6.4 million; farm population declined slightly from 620,000 to 617,000; and average size of farm increased from 224 acres to 307 acres. The increase in size of farm was almost entirely accounted for by an increase in the size of irrigated farms. Development in the northeastern counties has followed a similar pattern.

### Assumptions underlying the projections

In presuming that there will be a reversal of the present trend, this study bases its projections on the following assumptions:

1. Estimates of agricultural development in the northeastern counties should indicate the maximum development possible with full use of water resources.
2. Population pressure will require higher ratios of people to land, and every productive acre of farm land will be called upon to support a maximum share of population.
3. To achieve a maximum ratio of people to farm land, farm land will be shifted generally into the most intensive use of which it is capable



This process will be aided by technological improvements which cannot now be predicted.

4. Farms will attract a large number of people as desirable places to live and make a living in the highly urbanized nation of the future.

#### State-wide increase in irrigated acreage

The State Division of Water Resources has estimated that a gross area of 19,050,000 acres is suitable for irrigated agriculture and that "under ultimate conditions of development in the State a net area averaging about 16,250,000 acres will actually be irrigated" (State Water Resources Board Bulletin No. 2, page 222).

This estimate is very close to that of Varden Fuller of the Giannini Foundation for Agricultural Economics, who has written:

"In combination, the various accelerating forces may approximately offset the growing resistances to the development of water resources and the achievements from their use. If so, the decades immediately ahead may see irrigation expansion at near the average of the past half century, namely, at an average of a million acres per decade. If development were to be at that rate, the estimated ultimate development of 17 million acres will be achieved by about 2050. If the accelerated rate of 1940-1950 were to be maintained, the ultimate would be reached by 2020" (from Chapter XVIII of Growth and Changes in California's Population, by Warren S. Thompson, the Haynes Foundation, Los Angeles 1955, pp. 288-289).



### Basis for population increase

It has been noted that increases in irrigated land in California provide a basis for increased population. In studies for the Central Valley Project, the Bureau of Reclamation stated:

"The development of water and power affords new economic opportunities in agriculture and industry which can support an increased population. This factor is of prime importance in California where the population has expanded and probably will continue to expand much more rapidly than in the rest of the United States" (Report of U. S. Department of Interior, Bureau of Reclamation, Central Valley Basin, August 1949; printed as Senate Document 113, 81st Congress, 1st Session, page 63).

### Ratio of new irrigated acreage to new farms

The Bureau of Reclamation report estimated that an increase of 3,860,000 in irrigated acreage in the Central Valley basin would provide a basis for creation of some 51,000 new farms - a ratio of 75.7 new irrigated acres per new farm (Report, page 198).

The projections presented in this report indicate that for the state as a whole, the increase in irrigated acreage from 7,048,049 in 1954 to 16,250,000 in 2050 will result in an increase in number of farms from 123,074 in 1954 to 220,000 in 2050 - a ratio of 94.9 new irrigated acres per new farm created.

For the 15 northeastern counties, the indicated increases are 2,525,837 irrigated acres and 15,639 farms - a ratio of 161.5 new irrigated acres per new farm created.

It is clear that the ratio for the 15 counties results in a conservative estimate of the increase in number of farms compared with increases indicated by the state and Central Valley ratios.

The ratio of new irrigated acres to estimated new farms in each of the northeastern counties is shown in Table 13.

Table 13

AVERAGE NUMBER OF NEW IRRIGATED ACRES  
PER NEW FARM IN 15 NE. COUNTIES FROM 1954 TO 2050

	Additional Irrigated Acres	New Farms	Ratio of New Acres to New Farms
Butte	196,872	1,112	177.0
Colusa	236,971	1,834	129.2
Glenn	196,889	2,462	80.0
Lake	60,102	304	197.7
Lassen	388,282	1,348	288.0
Modoc	227,328	1,101	206.5
Plumas	85,899	249	345.0
Shasta	162,939	971	167.8
Sierra	34,899	214	163.1
Siskiyou	249,648	1,375	181.6
Sutter	99,266	808	122.9
Tehama	246,434	1,053	234.0
Trinity	13,036	15	869.1
Yolo	215,582	2,272	94.9
Yuba	<u>111,690</u>	<u>521</u>	<u>214.4</u>
Total	2,525,837	15,639	161.5
State	9,201,951	96,926	94.9

### Procedure for estimating farm population and employment

Most of the figures presented in Table 14 and Tables 54-69 are historical data from the Census of Agriculture for 1930, 1940, 1950 and 1954. These data have been used to indicate current trends in agricultural development, and to provide a benchmark for estimates of ultimate development (2020-2050). Key determinations for ultimate development are the following:

Irrigated land in farms is the estimate of net irrigable acreage made by the State Department of Water Resources from its 1956 land classification survey. To obtain number of irrigated farms, this figure has been divided by an assumed average of irrigated acres per irrigated farm. The latter is a judgment figure based on the historical Census data, on probable ultimate crop patterns, and on opinions of agricultural experts interviewed in the various counties. Much assistance was obtained from Circular 173 of the California Agricultural Extension Service, Farming in California, May 1951.

It should be noted that the assumed figures of irrigated acreage per farm are generally higher than those indicated in Circular 173. Effort was made to have the assumed average reflect local conditions, including length of growing season and the probable ultimate crop pattern of each county.

In general, average irrigated acreage per farm is assumed to be greater where farming is expected to be predominantly extensive - livestock and pasture - and smaller where the dominant type of cultivation will be more intensive - field crops, truck crops, and orchards.

Average size of farm represents a judgment as to the minimum economic unit required to support a farm family. It is based on the same factors as the estimate for irrigated land in farms, namely, past trends, the judgment of local farm experts, and considerations set forth in Circular 173. The estimates for average size of farm used in the projections are considerably larger than the estimates of minimum economic unit made by expert sources.

Total land in farms is an estimate based largely on recent Census data, and on consideration of the expansion believed likely to take place in other land uses such as urban and recreational. A precise estimate of total land in farms in each county is not now available because the Census Bureau reports land in farms according to the county in which the farm headquarters is located. This means that some farm land credited to a specific county is located outside it; and some farm land in the county is not credited to it. Unless these acreages happen to balance, the reported Census figure overstates or understates actual land in farms in the county.

Average population per farm equals total farm population divided by number of farms as reported by the Census Bureau. Estimates of average population per farm at time of ultimate development are based on projected changes in average size of farms and employment required per farm. The figures represent all persons living on farms, and not solely members of the primary farm household.

Average employment per farm is also estimated primarily from the Census data. Consideration was given also to ultimate crop patterns and to farm labor requirements, as estimated by the Agricultural Extension Service. Average employment per farm is estimated as of April 1, and therefore tends to represent the permanent farm labor force. It is assumed that seasonal farm requirements will be supplied both by migratory labor and by residents who are not in the labor force on a year-around basis.

All other figures shown in the "ultimate" column of the tables on farm population and employment are derived from the foregoing key determinations.

RURAL FARM POPULATION AND EMPLOYMENT  
DATA AND PROJECTIONS  
STATE OF CALIFORNIA

	1930	1940	1950	1954	Ultimate
1 Number of farms - total	135,676	132,658	137,168	123,074	220,000
2 - irrigated farms	85,784	84,310	90,755	84,502	203,500
3 - non-irrigated farms	49,892	43,348	46,413	38,572	16,500
4 Land in farms - total (acres)	30,442,581	30,524,324	36,613,291	37,800,380	37,500,000
5 - irrigated farms	12,018,864	14,071,222	20,562,873	22,967,240	32,500,000
6 - non-irrigated farms	18,423,717	16,453,102	16,050,418	14,833,140	5,000,000
7 Irrigated land in farms (acres)	4,746,632	4,276,554	6,438,324	7,048,049	16,250,000*
8 - % of land in farms	15.6	14.0	17.6	18.6	43.3
9 - % land in irrigated farms	39.5	30.4	31.3	30.7	50.0
10 - avg. per irrigated farm (acres)	55.3	50.7	70.9	83.4	80.
11 Average size of farm (acres)	224.4	230.1	266.9	307.1	170
12 - irrigated farms	140.1	166.9	226.6	271.8	160
13 - non-irrigated farms	369.3	340.3	345.8	384.6	300
14 Farm population April 1 - total	620,506	670,426	617,367 <sup>1/</sup>		1,070,000
15 - urban farm	41,156	35,037	49,136 <sup>1/</sup>		
16 - rural farm - total	579,350	635,389	568,231 <sup>1/</sup>		1,070,000
17 - rural farm; average per farm	4.57	5.05	4.50		4.9
18 - % state population	10.9	9.71	5.83		2.4
19 - no. per 1,000 acres	20.38	21.96	16.86		28.5
20 Farm employment, April 1, total	334,241	265,871	286,642		480,000
21 - % rural farm popu- lation	57.7	41.8	50.4		44.9
22 - % civiliam employment	13.36	10.74	7.35		2.8
23 - no. per 1,000 acres	10.98	8.71	7.83		12.8
24 - average per farm	2.46	2.00	2.09		2.2

<sup>1/</sup> New definition.

Old: Urban farm - 32,204

Rural farm - 585,163

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

\* SWRB Bulletin No. 2, page 222



G. Estimation of April 1 employment in lumber and wood products industries in 15 northeastern California counties under conditions of probable ultimate sustained yield

The employment estimates for lumber and wood products industries shown in Table 15 are derived essentially from sustained yield capacity estimates supplied by the U. S. Forest Service, California Region, and employment factors published by Ralph W. Marquis, Forest Economist, U. S. Forest Service, in the Journal of Forestry, May 1948.

Sustained Yield

The estimates of sustained yield capacity are provided in a letter from B. H. Payne, Assistant Regional Forester, Division of Timber Management, U. S. Forest Service, California Region, to California State Division of Water Resources, dated March 13, 1956, reference "S-PLANS - Timber Management."

The estimates, according to W. R. Howden of the Timber Management section, are sustained yield capacities of timber areas and working circles in the 15 northeast counties, allocated as precisely as possible to individual counties. Both public and private forest lands are included.

The "ultimate sustained yield capacity" for the commercial forest land in each county is based upon the assumption that all lands capable of growing commercial forest stands would be used for that purpose, and that an

average stocking capacity of 80 percent would be obtained. The acreages in commercial forest stands used in these estimates are those shown by the California Forest and Range Experiment Station of the U. S. Forest Service in Forest Survey Release No. 25, December 1954, Table 12.

Sustained yield capacity is compared with estimates of current production of saw timber in Table 16.

### Employment Factors

The employment factors for logging, rough lumber (sawmills) and "all other" wood products manufacture in Standard Industrial Classification Groups 24 and 25 are taken from the article by Ralph W. Marquis entitled "Employment Opportunities in Full Forest Utilization", Journal of Forestry, May 1948. These factors are presented in Tables 17 and 18.

Marquis estimates the employment which might result from full utilization of the timber resources of a typical area in the Douglas fir region of Oregon and Washington. The labor requirement factors used in his estimates, though not tested against specific experience in the California pine, fir and Douglas fir regions, appear to be in general agreement with employment ratios of timber operators in the northeast counties.

For example, Marquis shows that under present utilization there are approximately 10.0 men per million board feet of sawtimber cut, employed in logging, primary manufacture including rough lumber and plywood, and remanu-

facture including planing mill products, box and shooK. These are the principal lumber industry operations now found in the northeastern counties. The ratios reported by timber operators during a survey of the northeastern counties in July-August 1956 ranged from 6.0 to 12.0 men per million board feet of sawtimber cut, depending on the range of operations performed. For comparison, statewide employment in 1952 in lumber and wood products industries (excluding pulp and paper products) averaged 12 persons per million board feet of sawtimber cut that year. This ratio included furniture production which is not presently a factor in the northeastern counties.

#### Full Utilization

The concept of full utilization used by Marquis is based on the historical trend, demonstrated in timber areas of the East and Pacific Northwest, that "with the diminishing availability of an area's accessible timber resource, that area will shift to the production of more final and less primary products from its modified resource base - the net result of such a shift shows that greater employment may be obtained from a given resource input" (Walter J. Mead, "The Forest Products Economy of the Pacific Northwest", Land Economics, University of Wisconsin, May 1956).

California's forest industry is now based primarily on the single product, lumber. In 1952, employment in the industry averaged 68,097 persons, or 11.9 persons per million board feet of sawtimber cut that year.

EMPLOYMENT (APRIL 1) IN TIMBER INDUSTRY  
15 NORTHEASTERN COUNTIES  
1940, 1950 AND ULTIMATE

	1940	1950	At Ultimate Sustained Timber Yield		Total
			Lumber and Wood Products (SIC Gps. 24,25)	Pulp and Paper (SIC Gp. 26)	
Butte	964	1,761	2,073	1,978	4,051
Colusa	11	27	74	-	74
Glenn	10	25	332	-	332
Lake	56	145	517	-	517
Lassen	2,540	1,894	1,636	-	1,636
Modoc	671	664	1,156	-	1,156
Plumas	1,129	1,527	3,215	-	3,215
Shasta	499	2,323	4,531	3,487	8,018
Sierra	295	170	1,380	-	1,380
Siskiyou	3,027	3,201	6,863	856	7,719
Sutter	9	100	-	-	-
Tehama	42	451	2,542	1,721	4,263
Trinity	24	644	1,902	-	1,902
Yolo	47	68	-	-	-
Yuba	54	543	859	837	1,696
Total	9,378	13,543	27,080	8,879	35,959

CURRENT TIMBER PRODUCTION AND SUSTAINED YIELD CAPACITY OF  
COMMERCIAL FOREST LAND IN 15 NORTHEASTERN COUNTIES  
(Production in millions of board feet of saw timber per year)

	Current (1952-45 Average 1/)	Ultimate Sustained Yield Capacity 2/
Butte	147	135
Colusa	-	6
Glenn	37	27
Lake	24	42
Lassen	202	133
Modoc	104	94
Plumas	366	295
Shasta	377	303
Sierra	95	138
Siskiyou	378	558
Sutter	-	-
Tehama	92	166
Trinity	262	326
Yolo	-	-
Yuba	43	44
Total	2,127	2,267

1/ California State Department of Natural Resources, Division of Forestry, annual reports on commodity production of forest products.

2/ U. S. Department of Agriculture, Forest Service, California Region, letter from B. H. Payne to California State Division of Water Resources, March 13, 1956.

Table 17

LABOR REQUIREMENTS PER UNIT OF PRODUCTION  
IN LUMBER AND WOOD PRODUCTS INDUSTRIES  
(Present Utilization)

Unit		Marquis 1/ .....(No. Employed).....	Forest Service <sup>2/</sup> .....
Logging	MM bd. ft. saw timber	3.40	3.35
Thinning	M cords	5.00	-
Rough lumber	MM bd. ft.	3.25	3.25
Dressed lumber	MM bd. ft. lumber used	1.75	1.75
Mill work	MM bd. ft. lumber used	15.00	15.00
Box	MM bd. ft. lumber used	7.50	7.50
Furniture	MM bd. ft. lumber used	80.00	
Caskets	MM bd. ft. lumber used	10.00	
Shingles	M squares	0.63	0.63
Plywood	MM sq. ft.	5.44	5.40
Pulp	M tons	3.65	3.25
Paper and board	M tons	7.25	6.50
Molasses	Ton	-	4.50
Alcohol	M gal.	-	6.00

<sup>1/</sup> Ralph W. Marquis, "Employment Opportunities in Full Forest Utilization," Journal of Forestry, May 1948.

<sup>2/</sup> U. S. Forest Service, Report on Timber and Range Resources of the Upper Klamath Basin, in departmental report entitled Upper Klamath River Basin, U. S. Bureau of Reclamation, June 1954.

EMPLOYMENT RATIOS IN LUMBER AND WOOD PRODUCTS  
INDUSTRIES WITH FULL UTILIZATION  
Expressed as persons employed per MM bd. ft. of saw timber cut

	Marquis <sup>1/</sup>	Used For This Report <sup>2/</sup>
Logging	7.07	7.0
Rough lumber	3.34	3.3
Plywood, shingles and cooperage, planing, furniture, mill work, box shook, etc.	4.89	4.8
Pulp	2.30	1.8
Paper board	2.97	2.4
Converted paper products	0.66	0.5
Use of sawmill waste	1.50	-
Total	22.73	19.8

<sup>1/</sup> See footnote 1, Table 17

<sup>2/</sup> Derived from Marquis, adjusted according to labor requirements shown in Forest Service report (Table 17)



Marquis' typical Douglas-fir area shows under present utilization 11.6 persons employed per million board feet of saw timber cut; under full utilization, the same area has a potential for employment of 22.7 persons per million board feet. The increased employment is accounted for by salvage of cull timber and logging residues in the forest, by greater remanufacture of rough lumber, and by fuller use of logging and milling residues suitable for production of pulp, paper, hardboard and softboard, and other converted paper products.

The current rate of cutting in California forests is roughly double the current rate of growth of sawtimber. Some excess of growth over cut is reasonable and necessary because of the dominance of recent old-growth timber which makes little contribution to net growth.

" However, there is substantial evidence to indicate that the cut from California forests has reached a plateau level and that further significant increases in the volume of cut are not likely. Further expansion of the forest industries to contribute to the support of the expanding population and to add to the supply of needed forest products in the state must come primarily from increased use of the timber cut rather than from increases in the volume cut" (from draft report of the Cooperative Study on Waste Treatment and Disposal Aspects of Development of Pulp and Paper Resources of California, by the State Water Pollution Control Board and cooperating agencies, June 21, 1956).

#### April 1 Employment

Estimates of annual employment in lumber and wood products industries have been adjusted to an April 1 level for consistency with present methods of re-

porting population and employment used by the U. S. Bureau of the Census. Data of the California State Department of Employment and Department of Industrial Relations were used to formulate seasonal adjustment factors based on current experience.

A special tabulation of employment in logging camps, sawmills and planing mills in the 15 northeastern counties, prepared by the State Department of Employment for this study, shows the following April 1 employment levels (average of March and April):

	<u>1950</u>	<u>1951</u>
April 1 employment, 15 counties, as percent of year average:		
Logging camps and contractors	57.3	78.5
Sawmills and planing mills	84.4	92.4

For the state as a whole in 1950, the April 1 level of logging employment was 65 percent of the year average; the level of employment in sawmills and planing mills was 84 percent.

For the state as a whole, State Department of Employment data show April 1 employment in the lumber and wood products industry (excluding furniture) has averaged 91 percent of the annual average in recent years (Table 19).

Table 19

EMPLOYMENT IN CALIFORNIA LUMBER AND WOOD PRODUCTS  
INDUSTRIES AS OF APRIL 1 AS PERCENT OF ANNUAL AVERAGE EMPLOYMENT

Year	Lumber and Wood Products, Excluding Furniture	Furniture and Fixtures	Paper and Allied Products
1950	84.1	95.8	92.2
1951	94.1	104.6	99.7
1952	89.9	96.0	96.0
1953	95.6	104.9	96.4
1954	91.3	98.5	97.4
1955	91.9	98.5	96.9
Average	91.2	99.7	96.4

Source: State Department of Employment -  
California Employment & Payrolls 1950

State Department of Industrial Relations -  
Handbook of California Labor Statistics,  
1951-1952 and 1953-1954

Estimated Number of Wage & Salary Workers  
in Non-Agricultural Establishments, by  
Industry, California 1939-1955 (March 1956).

## Pulp, Paper and Board

The estimates of employment in wood pulp, paper and paper board manufacture in Table 15 are based on the following assumptions:

1. Annual production of pulp material in the 15 northeastern California counties, with a sustained yield of 2,267 million board feet of saw timber per year, will approximate 220,000,000 cubic feet of solid wood residues (forest residue plus coarse mill residue). This is in the framework of the assumption by the California Forest and Range Experiment Station that total material available for pulp production in the State, with a sustained yield of 4,000 million board feet per year, will approximate 385,000,000 cubic feet per year.

2. The 220,000,000 cubic feet of pulp material will yield about 550,000,000 cubic feet of wood chips (@ 80 cubic feet solid wood equals 200 cubic feet of chips).

3. The 550,000,000 cubic feet of chips will produce approximately 1,375,000 tons of pulp (@ 400 cubic feet of chips per ton of pulp). To allow for some diversion of pulp material to other uses, this estimate is reduced to 1,285,000 tons of pulp per year for employment estimate purposes.

The latter figure is selected because it is consistent with the pulp production estimate resulting from the Cooperative Study on Waste

Treatment and Disposal Aspects of Development of Pulp and Paper Resources of California, by the State Water Pollution Control Board and cooperating agencies, July 31, 1956. The Cooperative Study estimated that under sustained yield conditions (4,000 million board feet per year) and with minimum diversion of sawlogs from existing wood processing industries (only about 10 percent of sawlogs would go to pulp mills), there would be sufficient pulp material to support mills with a daily capacity of 6,445 tons, including the existing mills at Antioch and Ukiah.

On a proportional basis, the 15 counties would produce sufficient material to support mills with a daily capacity of approximately 3,675 tons (@ 350 working days per year). The 15 counties, with 57 percent of the state's sustained yield of saw timber, would presumably have at least 57 percent of its pulp material. However, it is estimated that only about 85 percent of this pulp material would be processed in the 15-county area.

4. Employment in pulp mills would be on the order of 3.25 men per 1,000 tons produced, per year. This ratio is used by the U. S. Forest Service in its report on timber and range resources of the Upper Klamath Basin (published as part of report by U. S. Bureau of Reclamation, Upper Klamath River Basin, June 1954).

It is somewhat below the ratio of 3.65 men per 1,000 tons used by Marquis in his Journal of Forestry article, May 1948.

5. Employment in paper and board production would be on the order of 6.50 men per 1,000 tons of paper and board production. The latter is assumed to be two-thirds of pulp tonnage, as indicated by Marquis. The ratio of 6.50 men per 1,000 tons is used by the Forest Service in the Upper Klamath Basin report. It is somewhat lower than the ratio of 7.25 men per 1,000 tons used by Marquis.

Use of the foregoing assumption results in a range of estimates of total employment generated by the area's pulp material output of 9,700 to 10,300 employed per year (Table 20). The total of county estimates shown in Table 15 is somewhat below this range, due to adjustment to an April 1 basis and allowance for pulp material processing outside the 15-county area.

6. It is assumed that the location of mills producing pulp, paper and board will be confined generally to central valley counties such as Shasta, Tehama, Butte, Yuba, and perhaps Siskiyou. These counties will process pulp materials received from their own forests and sawmills, plus those of Modoc, Lassen, Plumas, Sierra, Glenn and Colusa. It is assumed further that Trinity County's pulp material will be processed in Shasta and Tehama counties and the



north coastal area, one-third share each; and that Lake County's pulp material will be processed entirely in the north coastal area. These assumptions are based in the main on the findings of the Cooperative Study and in part on judgment factors resulting from interviews and observations in the various counties.

#### Output of major timber products

As a final step, estimates of annual production of major timber products in each of the 15 northeastern counties, under conditions of sustained yield and full forest utilization, have been made and are presented in Table 21. These estimates are derived from the data, estimates and assumptions presented in this section, including the sustained yield estimates provided by the Forest Service, the analysis of full utilization by Marquis, the pulp production estimates of the State Water Pollution Control Board Cooperative Study, and the assumptions as to location of pulp mills made by the authors of this report.



TOTAL YEARLY EMPLOYMENT IN PULP, PAPER AND BOARD PRODUCTION  
RESULTING FROM SUSTAINED YIELD CUTTING PROGRAM AND  
FULL FOREST UTILIZATION IN 15 NORTHEASTERN COUNTIES

Estimate No. 1

1)	State output of pulp material assuming sustained yield of 4,000 million board feet saw timber	=	385,000,000 cu.ft.
2)	15-county output of solid pulp material assuming sustained yield of 2,267 million board feet saw-timber (56.7% of state total)	=	218,295,000 cu.ft.
3)	218,295,000 cu. ft. solid pulp material (@ 80 cu. ft. solid wood = 200 cu. ft. chips)	=	545,737,500 cu.ft. chips
4)	545,737,500 cu. ft. chips (@ 400 cu. ft. chips = 1 ton pulp)	=	1,364,340 tons pulp (= 602 tons pulp/MM bd.ft. logs)
5)	Daily capacity @ 350 days/year		<u>3,898 tons</u>
6)	1,364,340 tons pulp = (@ 3.25 men/M tons pulp) (@ 6.50 men/M tons paper and board) (1 ton pulp = 2/3 ton paper and board)	employment of	<u>4,434</u> in pulp <u>5,912</u> in paper and board
	Total		10,346

Estimate No. 2

1)	State sustained yield of 4,000 million bd. ft. saw timber will provide enough pulp material for 6,445 tons daily capacity of mills. (State Water Pollution Control Board, Cooperative Study)
2)	15 northeastern counties, with 2,267 million bd. ft. of sawtimber (56.7% of state total) will provide enough material for <u>3,650</u> tons daily capacity of mills.
3)	$3,650 \times 350 \text{ days} = 1,277,500 \text{ tons/year}$
4)	$1,277,500 \times 3.25 = 4,152 \text{ men in pulp (= 1.83 men/MM bd. ft. saw logs)}$ $852,000 \times 6.50 = \underline{5,538} \text{ men in paper and board (= 2.44 men/MM ft. saw logs)}$
	Total                      9,690

Note: These estimates represent total yearly employment provided by all pulp material produced in the 15 counties. The estimate used for the 15 counties - 8,879 - represents April 1 employment, from approximately 85 percent of the pulp material produced in the area.

Table 21

ESTIMATED ANNUAL PRODUCTION OF MAJOR TIMBER PRODUCTS IN  
15 NORTHEASTERN COUNTIES AT SUSTAINED YIELD

County	Lumber (MM bd. ft.)	Plywood (M sq. ft.)	Pulp (M tons)	Paper and Paperboard (M tons)
Butte	286	21,840	244	156
Colusa	6	985		
Glenn	27	4,360		
Lake	42	6,790		
Lassen	134	21,520		
Modoc	95	15,195		
Plumas	149	47,730		
Shasta	417	66,610	431	276
Sierra	140	11,150		
Siskiyou	566	90,285	106	68
Tehama	168	44,440	213	135
Trinity	111	8,000		
Yuba	45	18,290	103	66
Total	2,186	357,200	1,097	701

## V. BASIC DATA AND PROJECTIONS

The tables which follow (Tables 22 - 69) comprise the basic statistical data and projections of the report. The first group of tables (Tables 22 - 37) deals with population; the second group (Tables 38 - 53) with employment; and the third group (Tables 54 - 69) with farm population and farm employment.

Sources of data are as follows:

### Population

Population data for 1920-1950 are from the Census of Population for those years. The 1920 Census was taken as of January 1; others were taken as of April 1.

The projections of ultimate population are based on estimates of future employment and on relationships of population growth in the northeastern counties to that in the state and nation.

### Employment

Employment data for 1940 and 1950 are from the Census of Population for those years.

Projections of ultimate employment are based on estimates of employment in local resource-based industries, agriculture and lumbering and wood products manufacture. The proportions of total employment provided by these industries and other economic activities have been projected on the basis of long-term trends observed from historical data for the United States and California.

A remarkable consistency has been found in the historical relationship between the proportion of employment in agriculture and lumber and wood products manufacture and the proportion of population residing in urban places. This relationship has been used as a check on the consistency and reasonableness of the projections.

#### Farm population and employment

Data for 1930, 1940 and 1950 and 1954 are from the Census of Agriculture.

Projections shown in the "ultimate" column are based on the key figure of irrigated land in farms, as estimated by the State Department of Water Resources from its 1956 land classification survey. All other figures in the column represent direct or derived judgments, based on consideration of the Census data for past years, and on information, judgments and opinions obtained from experts in the field of agriculture. These include farm advisors, agricultural commissioners and representative farmers interviewed in each county; soil classification experts of the Department of Water Resources; and agricultural economists of the California Agricultural Extension Service.

# Tables 22-37 POPULATION DATA AND PROJECTIONS NORTHEASTERN CALIFORNIA COUNTIES

COUNTY	1920	1930	1940	1950	Ultimate*
<b>15 COUNTIES TOTAL</b>					
Total population	162,905	199,089	249,298	330,339	1,747,400
Urban	30,881	36,884	43,892	114,465	1,203,980
Rural farm )		65,778	67,965	60,993	128,550
Rural non-farm)	132,024	96,427	137,441	154,941	414,870
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	19.0	18.5	17.6	34.6	68.9
Rural farm )		33.0	27.3	18.5	7.4
Rural non-farm)	81.0	48.5	55.1	46.9	23.7
<b>BUTTE</b>					
Total population	30,030	34,093	42,840	64,930	284,000
Urban	12,679	11,659	13,708	27,225	210,160
Rural farm )		9,144	10,465	9,408	15,820
Rural non-farm)	17,351	13,290	18,667	28,297	58,020
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	42.2	34.2	32.0	41.9	74.0
Rural farm )		26.8	24.4	14.5	5.6
Rural non-farm)	57.8	39.0	43.6	43.6	20.4
<b>COLUSA</b>					
Total population	9,290	10,258	9,788	11,651	68,000
Urban	-	-	-	3,031	40,120
Rural farm )		4,394	3,781	2,907	10,650
Rural non-farm)	9,290	5,864	6,007	5,713	17,230
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	-	-	-	26.0	59.0
Rural farm )		42.8	38.6	25.0	15.7
Rural non-farm)	100.0	57.2	61.4	49.0	25.3
<b>GLENN</b>					
Total population	11,853	10,935	12,195	15,448	85,000
Urban	-	-	-	3,019	48,450
Rural farm )		6,110	5,978	6,286	16,000
Rural non-farm)	11,853	4,825	6,217	6,143	20,550
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	-	-	-	19.5	57.0
Rural farm )		55.9	49.0	40.7	18.8
Rural non-farm)	100.0	44.1	51.0	39.8	24.2
<b>LAKE</b>					
Total population	5,402	7,166	8,069	11,481	65,000
Urban	-	-	-	-	29,250
Rural farm )		3,027	2,997	2,824	4,300
Rural non-farm)	5,402	4,139	5,072	8,657	31,450
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	-	-	-	-	45.0
Rural farm )		42.2	37.1	24.6	6.6
Rural non-farm)	100.0	57.8	62.9	75.4	48.4
<b>LASSEN</b>					
Total population	8,507	12,589	14,479	18,474	67,500
Urban	-	-	-	8,956	40,500
Rural farm )		2,199	2,115	1,659	7,850
Rural non-farm)	8,507	10,390	12,364	7,859	19,150
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	-	-	-	48.5	60.0
Rural farm )		17.5	14.6	9.0	11.6
Rural non-farm)	100.0	82.5	85.4	42.5	28.4
<b>MODOC</b>					
Total population	5,425	8,038	8,713	9,678	51,100
Urban	-	-	-	2,819	29,640
Rural farm )		2,762	3,048	3,066	7,400
Rural non-farm)	5,425	5,276	5,665	3,793	14,060
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	-	-	-	29.1	58.0
Rural farm )		34.4	35.0	31.7	14.5
Rural non-farm)	100.0	65.6	65.0	39.2	27.5
<b>PLUMAS</b>					
Total population	5,681	7,913	11,548	13,519	44,700*
Urban	-	-	-	-	22,350
Rural farm )		908	700	536	1,500
Rural non-farm)	5,681	7,005	10,848	12,983	20,850
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	-	-	-	-	50.0
Rural farm )		11.5	6.1	4.0	3.4
Rural non-farm)	100.0	88.5	93.9	96.0	46.6

COUNTY	1920	1930	1940	1950	Ultimate*
<b>SHASTA</b>					
Total population	13,361	13,927	28,800	36,413	100,000
Urban	2,962	4,188	8,109	10,256	20,000
Rural farm )		4,394	5,140	4,100	10,000
Rural non-farm)	10,399	5,345	15,551	22,057	70,000
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	22.2	30.1	28.2	28.2	28.2
Rural farm )		31.5	17.8	11.2	11.2
Rural non-farm)	77.8	38.4	54.0	60.6	60.6
<b>SIERRA</b>					
Total population	1,783	2,422	3,025	2,410	10,000
Urban	-	-	-	-	1,000
Rural farm )		265	306	205	1,000
Rural non-farm)	1,783	2,157	2,719	2,205	9,000
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	-	-	-	-	10.0
Rural farm )		10.9	10.1	8.5	8.5
Rural non-farm)	100.0	89.1	89.9	91.5	91.5
<b>SISKIYOU</b>					
Total population	18,545	25,480	28,598	30,733	100,000
Urban	2,528	2,610	4,968	5,966	20,000
Rural farm )		5,355	5,463	4,359	10,000
Rural non-farm)	16,017	17,515	23,135	20,408	70,000
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	13.6	10.2	17.2	19.4	19.4
Rural farm )		21.0	19.1	14.2	14.2
Rural non-farm)	86.4	68.8	80.9	66.4	66.4
<b>SUTTER</b>					
Total population	10,115	14,618	18,680	26,239	100,000
Urban	-	3,605	4,968	7,861	20,000
Rural farm )		8,088	8,134	8,724	10,000
Rural non-farm)	10,115	2,925	5,578	9,654	70,000
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	-	24.7	26.6	30.0	30.0
Rural farm )		55.3	43.5	33.2	33.2
Rural non-farm)	100.0	20.0	29.9	36.8	36.8
<b>TEHAMA</b>					
Total population	12,882	13,866	14,316	19,276	100,000
Urban	3,104	3,517	3,824	7,442	20,000
Rural farm )		6,764	6,835	6,313	10,000
Rural non-farm)	9,778	3,585	3,657	5,521	70,000
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	24.1	25.4	26.7	38.6	38.6
Rural farm )		48.8	47.8	32.8	32.8
Rural non-farm)	75.9	25.8	25.5	28.6	28.6
<b>TRINITY</b>					
Total population	2,551	2,809	3,970	5,087	10,000
Urban	-	-	-	-	1,000
Rural farm )		1,191	1,175	688	1,000
Rural non-farm)	2,551	1,618	2,795	4,399	9,000
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	-	-	-	-	10.0
Rural farm )		42.4	29.6	13.5	13.5
Rural non-farm)	100.0	57.6	70.4	86.5	86.5
<b>YOLO</b>					
Total population	17,105	23,644	27,243	40,640	100,000
Urban	4,147	5,542	6,637	21,986	40,000
Rural farm )		8,720	9,082	6,779	10,000
Rural non-farm)	12,958	9,382	11,524	11,875	50,000
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	24.2	23.4	24.4	54.1	54.1
Rural farm )		36.9	33.3	16.7	16.7
Rural non-farm)	75.8	39.7	42.3	29.2	29.2
<b>YUBA</b>					
Total population	10,375	11,331	17,034	24,420	100,000
Urban	5,461	5,763	6,646	15,904	40,000
Rural farm )		2,457	2,746	3,139	10,000
Rural non-farm)	4,914	3,111	7,642	5,377	50,000
Percent distribution	100.0	100.0	100.0	100.0	100.0
Urban	52.6	50.9	39.0	65.1	65.1
Rural farm )		21.7	16.1	12.9	12.9
Rural non-farm)	47.4	27.4	44.9	22.0	22.0

\*SDWR estimate in Report on Upper Feather River Service Area is: Total: 41,200; urban: 24,500; rural: 16,700

NOTE: 1950 urban population includes cities and unincorporated places having inhabitants or more. In previous census years, only incorporated places having inhabitants or more were considered "urban."



# Tables 38-53 EMPLOYMENT DATA AND PROJECTIONS NORTH-EASTERN CALIFORNIA COUNTIES (Employment as of April 1)

COUNTIES	1940		1950		Ultimate		SHASTA	1940		1950		Ultimate	
	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
Alameda	86,074	100.0	116,254	100.0	639,335	100.0	Industry group						
Agriculture	29,074	33.8	27,362	23.5	59,258	9.3	Total	10,042	100.0	12,743	100.0	70,200	100.0
Forestry & fisheries	23,705	27.6	25,416	21.9	55,113	8.6	Extractive	1,882	18.74	1,487	11.67	3,060	4.3
Mining	525	0.6	869	0.7	4,145	0.6	Agriculture	1,254	12.49	1,161	9.11	2,460	3.5
Manufacturing	4,804	5.6	1,077	0.9			Forestry & fisheries	70	.70	174	1.37	300	.4
Lbr. & wood prod.	12,042	14.0	18,397	15.8	108,993	17.0	Mining	558	5.55	152	1.19	300	.4
Other manufacturing	9,478	11.0	13,543	11.6	27,080	4.2	Manufacturing	758	7.55	2,650	20.80	14,740	21.0
	2,564	3.0	4,854	4.2	81,913	12.8	Lbr. & wood prod.	499	4.97	2,323	18.23	4,530	6.5
	44,958	52.2	70,495	60.7	471,084	73.7	Other manufacturing	259	2.58	327	2.57	10,210	14.5
							All other	7,402	73.71	8,606	67.53	52,400	74.6
Alameda	12,896	100.0	21,366	100.0	102,200	100.0	SIERRA						
Agriculture	3,816	29.59	3,841	17.98	6,330	6.2	Total	1,289	100.0	795	100.0	5,750	100.0
Forestry & fisheries	3,052	23.67	3,582	16.77	5,930	5.8	Extractive	562	43.60	148	18.62	500	8.7
Mining	40	.31	83	.39	100	0.4	Agriculture	110	8.53	67	8.43	300	5.2
Manufacturing	724	5.61	176	.82	300	0.4	Forestry & fisheries	9	.70	8	1.01	50	.9
Lbr. & wood prod.	1,599	12.40	3,226	15.10	18,400	18.0	Mining	443	34.37	73	9.18	150	2.6
Other manufacturing	964	7.48	1,761	8.24	2,073	2.0	Manufacturing	310	24.05	204	25.66	1,500	26.1
	635	4.92	1,465	6.86	16,327	16.0	Lbr. & wood prod.	295	22.89	170	21.38	1,380	24.0
	7,481	58.01	14,299	66.92	77,470	75.8	Other manufacturing	15	1.16	34	4.28	120	2.1
							All other	417	32.35	443	55.72	3,750	65.2
Alameda	3,482	100.0	4,268	100.0	26,500	100.0	SISKIYOU						
Agriculture	1,682	48.30	1,892	44.33	5,900	22.3	Total	11,204	100.0	11,662	100.0	46,180	100.0
Forestry & fisheries	1,664	47.79	1,878	44.00	5,830	22.0	Extractive	2,917	26.04	1,869	16.03	4,650	10.1
Mining	14	.40	8	.19	70	.3	Agriculture	1,900	16.97	1,484	12.73	3,925	8.5
Manufacturing	87	2.50	156	3.66	2,120	8.0	Forestry & fisheries	118	1.05	187	1.60	350	.8
Lbr. & wood prod.	11	.32	27	.63	74	.3	Mining	899	8.02	198	1.70	375	.8
Other manufacturing	76	2.18	129	3.03	2,046	7.7	Manufacturing	3,192	28.49	3,429	29.40	9,220	20.0
	1,713	49.20	2,220	52.01	18,480	69.7	Lbr. & wood prod.	3,027	27.02	3,201	27.45	6,864	14.9
							Other manufacturing	165	1.47	228	1.95	2,356	5.1
							All other	5,095	45.47	6,364	54.57	32,310	69.9
Alameda	4,209	100.0	5,858	100.0	32,080	100.0	SUTTER						
Agriculture	2,170	51.56	2,543	43.41	8,080	25.2	Total	5,729	100.0	8,942	100.0	47,180	100.0
Forestry & fisheries	2,144	50.94	2,517	42.97	8,000	25.0	Extractive	2,909	50.78	3,497	39.11	5,290	11.2
Mining	17	.40	23	.39	80	.2	Agriculture	2,848	49.71	3,457	38.66	5,190	11.0
Manufacturing	9	.22	3	.05			Forestry & fisheries	3	.06	4	.04	100	0.2
Lbr. & wood prod.	170	4.04	320	5.46	2,570	8.0	Mining	58	1.01	36	.41		
Other manufacturing	10	.24	25	.43	332	1.0	Manufacturing	213	3.72	503	5.62	7,550	16.0
	160	3.80	295	5.03	2,238	7.0	Lbr. & wood prod.	9	.16	100	1.12		
	1,869	44.40	2,995	51.13	21,430	66.8	Other manufacturing	204	3.56	403	4.50	7,550	16.0
							All other	2,607	45.50	4,942	55.27	34,340	72.8
Alameda	2,573	100.0	3,946	100.0	21,000	100.0	TEHAMA						
Agriculture	1,064	41.35	1,185	30.03	1,700	8.1	Total	4,800	100.0	6,941	100.0	36,800	100.0
Forestry & fisheries	915	35.56	1,125	28.51	1,680	8.0	Extractive	2,008	41.83	2,024	29.16	3,560	9.7
Mining	21	.82	40	1.01	120	.1	Agriculture	1,963	40.90	1,967	28.34	3,310	9.0
Manufacturing	128	4.97	20	.51			Forestry & fisheries	30	.62	49	.71	150	0.7
Lbr. & wood prod.	123	4.78	258	6.54	1,678	8.0	Mining	15	.31	8	.11	100	
Other manufacturing	56	2.18	145	3.68	517	2.5	Manufacturing	200	4.17	759	10.94	6,630	18.0
	67	2.60	113	2.86	1,161	5.5	Lbr. & wood prod.	42	.88	451	6.50	2,540	6.9
	1,386	53.87	2,503	63.43	17,622	83.9	Other manufacturing	158	3.29	308	4.44	4,090	11.1
							All other	2,592	54.00	4,158	59.90	26,610	72.3
Alameda	5,476	100.0	6,569	100.0	24,930	100.0	TRINITY						
Agriculture	830	15.16	706	10.75	3,700	14.8	Total	1,388	100.0	1,764	100.0	7,925	100.0
Forestry & fisheries	760	13.89	644	9.80	3,490	14.0	Extractive	864	62.25	369	20.92	508	6.4
Mining	49	.89	61	.93	210	0.8	Agriculture	303	21.83	227	12.87	208	2.6
Manufacturing	21	.38	1	.02			Forestry & fisheries	50	3.60	52	2.95	120	1.5
Lbr. & wood prod.	2,738	50.0	1,997	30.40	2,500	10.0	Mining	511	36.82	90	5.10	180	2.3
Other manufacturing	2,640	48.21	1,894	28.83	1,636	6.6	Manufacturing	33	2.38	651	36.90	2,100	26.5
	98	1.79	103	1.57	864	3.4	Lbr. & wood prod.	24	1.73	644	36.50	1,902	24.0
	1,908	34.84	3,866	58.65	18,730	75.2	Other manufacturing	9	.65	7	.40	198	2.5
							All other	491	35.37	744	42.18	5,317	67.1
Alameda	3,328	100.0	3,735	100.0	18,510	100.0	YOLO						
Agriculture	1,237	37.17	1,203	32.21	2,945	15.9	Total	9,747	100.0	15,072	100.0	146,250	100.0
Forestry & fisheries	1,161	34.89	1,128	30.20	2,775	15.0	Extractive	4,260	43.70	4,772	31.66	9,450	6.4
Mining	35	1.05	66	1.77	120	.9	Agriculture	4,224	43.33	4,728	31.37	9,250	6.3
Manufacturing	41	1.23	9	.24	50	.4	Forestry & fisheries	11	.11	24	.16	200	0.1
Lbr. & wood prod.	720	21.63	739	19.79	1,700	9.2	Mining	25	.26	20	.13		
Other manufacturing	671	20.16	664	17.78	1,156	6.3	Manufacturing	525	5.39	1,064	7.06	29,250	20.0
	49	1.47	75	2.01	544	2.9	Lbr. & wood prod.	47	.48	68	.45		
	1,371	41.20	1,793	48.00	13,865	74.9	Other manufacturing	478	4.91	996	6.61	29,250	20.0
							All other	4,962	50.91	9,236	61.28	107,550	73.5
Alameda	4,475	100.0	5,028	100.0	16,080	100.0	YUBA						
Agriculture	1,176	26.28	320	6.36	700	4.3	Total	5,436	100.0	7,565	100.0	37,750	100.0
Forestry & fisheries	281	6.28	187	3.72	500	3.1	Extractive	1,697	31.22	1,506	19.91	2,885	7.3
Mining	60	1.34	61	1.21	100	.6	Agriculture	1,126	20.71	1,264	16.71	2,265	6.0
Manufacturing	835	18.66	72	1.43	100	.6	Forestry & fisheries	8	.15	25	.38	100	1.3
Lbr. & wood prod.	1,171	26.17	1,601	31.84	3,375	21.0	Mining	563	10.36	213	2.82	400	
Other manufacturing	1,129	25.23	1,527	30.37	3,215	20.0	Manufacturing	203	3.73	840	11.10	5,660	15.0
	42	.94	74	1.47	160	1.0	Lbr. & wood prod.	54	.99	543	7.18	859	2.3
	2,128	47.55	3,107	61.80	12,005	74.7	Other manufacturing	149	2.74	297	3.92	4,801	12.7
							All other	3,536	65.05	5,219	68.99	29,205	77.7

NOTE:  
Lumber and wood products include industries in Standard Industrial Classification Groups 24 and 25.  
Pulp, paper and allied products (S.I.C. Group 26) are included in "Other manufacturing," which is in accordance with present Census Bureau practice.

Table 54

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

15 N. E. Counties

	1930	1940	1950	1954	Ultimate
1 Number of farms - total	15,825	14,827	15,375	15,248	30,88
2 - irrigated farms	8,854	9,432	10,518	10,985	28,06
3 - non-irrigated farms	6,971	5,395	4,857	4,263	2,82
4 Land in farms - total (acres)	6,846,424	6,856,600	7,715,014	8,107,983	8,155,00
5 - irrigated farms	3,178,360	4,087,248	4,972,678	5,701,561	7,024,85
6 - non-irrigated farms	3,668,064	2,769,352	2,742,336	2,406,422	1,130,15
7 Irrigated land in farms (acres)	674,501	869,283	1,085,368	1,278,063	3,803,90
8 - % of land in farms	9.9	12.7	14.1	15.8	46.
9 - % land in irrigated farms	21.2	21.3	21.8	22.4	54.
10 - avg. per irrigated farm (acres)	76.2	92.2	103.2	116.3	135.
11 Average size of farm (acres)	432.6	462.4	501.8	531.7	264
12 - irrigated farms	359.0	433.3	472.8	519.0	250
13 - non-irrigated farms	526.2	513.3	564.6	564.5	400
14 Farm population - total	66,158	68,088	61,592		128,55
15 - urban farm	380	123	599		-
16 - rural farm - total	65,778	67,965	60,993		128,55
17 - rural farm, average per farm	4.16	4.58	3.97		4.
18 - % county population	33.0	27.3	18.5		7.
19 - no. per 1,000 acres	9.61	9.91	7.91		15.
20 Farm employment, April 1, total	33,374	23,705	25,416		55,11
21 - % rural farm population	50.7	34.9	41.7		42.
22 - % civiliam employment	37.2	27.5	21.9		8.
23 - no. per 1,000 acres	4.87	3.46	3.29		6.
24 - average per farm	2.11	1.60	1.65		1.

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."



# RURAL FARM POPULATION AND EMPLOYMENT NORTHEASTERN CALIFORNIA COUNTIES 1930-54 and Ultimate

Butte County

	1930	1940	1950	1954	Ultimate
1 Number of farms - total	2,603	2,584	2,680	2,843	3,955
2 - irrigated farms	1,445	1,500	1,835	2,026	3,770
3 - non-irrigated farms	1,158	1,084	845	817	185
4 Land in farms - total (acres)	619,584	582,779	676,109	672,802	600,000
5 - irrigated farms	264,379	310,846	436,385	521,309	555,000
6 - non-irrigated farms	355,205	271,933	239,724	151,493	45,000
7 Irrigated land in farms (acres)	67,038	79,885	125,209	161,628	358,500
8 - % of land in farms	10.8	13.7	18.5	24.0	59.8
9 - % land in irrigated farms	25.4	25.7	28.7	31.0	64.6
10 - average per irrigated farm (acres)	46.4	53.3	68.2	79.8	95.1
11 Average size of farm (acres)	238.0	225.5	252.3	236.7	152
12 - irrigated farms	183.0	207.2	237.8	257.3	147
13 - non-irrigated farms	306.7	250.9	283.7	185.4	243
14 Farm population - total	9,173	10,491	9,565		15,820
15 - urban farm	29	26	157		-
16 - rural farm - total	9,144	10,465	9,408		15,820
17 - rural farm: average per farm	3.51	4.05	3.51		4.0
18 - % county population	26.8	24.4	14.5		5.6
19 - no. per 1,000 acres	14.76	17.96	13.91		26.4
20 Farm employment, April 1 - total	4,451	3,052	3,582		5,930
21 - % rural farm population	48.7	29.2	38.1		37.5
22 - % civilian employment	31.57	23.7	16.8		5.8
23 - no. per 1,000 acres	7.18	5.23	5.30		9.9
24 - average per farm	1.71	1.18	1.34		1.5

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		Colusa County				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	894	730	813	746	2,580
2	- irrigated farms	359	400	530	533	2,350
3	- non-irrigated farms	535	330	283	213	230
4	Land in farms - total (acres)	481,604	437,030	532,915	597,968	600,000
5	- irrigated farms	120,004	196,771	346,489	443,732	530,000
6	- non-irrigated farms	361,600	240,259	186,426	154,236	70,000
7	Irrigated land in farms (acres)	58,369	82,890	97,347	138,929	375,900
8	- % of land in farms	12.1	19.0	18.3	23.2	62.7
9	- % land in irrigated farms	48.6	42.1	28.1	31.3	70.9
10	- Average per irrigated farm (acres)	162.6	207.2	183.7	260.7	160.0
11	Average size of farm (acres)	538.7	598.7	655.5	801.6	235
12	- irrigated farms	334.3	492.0	653.8	832.5	225
13	- non-irrigated farms	675.9	728.1	658.7	724.1	300
14	Farm population - total	4,394	3,781	2,919		10,650
15	- urban farm	-	-	12		-
16	- rural farm - total	4,394	3,781	2,907		10,650
17	- rural farm: average per farm	4.91	5.18	3.58		4.1
18	- % county population	42.8	38.6	25.0		15.7
19	- No. per 1,000 acres	9.12	8.65	5.45		17.7
20	Farm employment, April 1 - total	2,712	1,664	1,878		5,830
21	- % rural farm population	61.7	44.0	64.6		54.7
22	- % civilian employment	57.3	47.8	44.0		22.0
23	- No. per 1,000 acres	5.63	3.81	3.52		9.7
24	- average per farm	3.03	2.28	2.31		2.3

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

Table 57

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		Glenn County				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	1,463	1,376	1,527	1,538	4,000
2	- irrigated farms	997	1,061	1,292	1,318	3,700
3	- non-irrigated farms	466	315	235	220	300
4	Land in farms - total (acres)	586,411	541,555	611,865	703,043	620,000
5	- irrigated farms	185,392	258,807	387,450	411,049	515,000
6	- non-irrigated farms	401,019	282,748	224,415	291,994	105,000
7	Irrigated land in farms (acres)	60,306	101,557	102,557	136,511	333,400
8	- % of land in farms	10.3	18.8	16.8	19.4	53.8
9	- % land in irrigated farms	32.5	39.2	26.5	33.2	64.7
10	- average per irrigated farm (acres)	60.5	95.7	79.4	103.6	90.1
11	Average size of farm (acres)	400.8	393.6	400.7	457.1	155
12	- irrigated farms	185.9	243.9	299.9	311.9	140
13	- non-irrigated farms	860.6	897.6	955	1,327.2	350
14	Farm population - total	6,110	5,978	6,286		16,000
15	- urban farm	-	-	-		-
16	- rural farm - total	6,110	5,978	6,286		16,000
17	- rural farm: average per farm	4.18	4.34	4.12		4.00
18	- % county population	55.9	49.0	40.7		18.8
19	- no. per 1,000 acres	10.42	11.04	10.27		25.8
20	Farm employment, April 1 - total	2,573	2,144	2,517		8,000
21	- % rural farm population	42.1	35.9	40.0		50.0
22	- % civilian employment	55.3	50.9	43.0		24.9
23	- no. per 1,000 acres	4.39	3.96	4.11		12.9
24	- average per farm	1.76	1.56	1.65		2.0

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

Lake County

	1930	1940	1950	1954	Ultimate
1 Number of farms - total	1,057	876	1,058	1,038	1,342
2 - irrigated farms	110	141	314	359	854
3 - non-irrigated farms	947	735	744	679	488
4 Land in farms - total (acres)	240,445	229,854	252,923	247,810	200,000
5 - irrigated farms	52,476	56,802	110,261	112,489	102,450
6 - non-irrigated farms	187,969	173,052	142,662	135,321	97,550
7 Irrigated land in farms (acres)	1,916	3,281	9,174	12,498	72,600
8 - % of land in farms	0.7	1.4	3.6	5.0	36.3
9 - % land in irrigated farms	3.7	5.8	8.3	11.1	70.9
10 - average per irrigated farm (acres)	17.4	23.3	29.2	34.8	85.0
11 Average size of farm (acres)	227.5	262.4	239.1	238.7	149.
12 - irrigated farms	477.1	402.9	351.1	313.3	120
13 - non-irrigated farms	198.5	235.4	191.8	199.3	200
14 Farm population - total	3,027	2,997	2,824		4,300
15 - urban farm	-	-	-		-
16 - rural farm - total	3,027	2,997	2,824		4,300
17 - rural farm: average per farm	2.86	3.42	2.67		3.2
18 - % county population	42.2	37.1	24.6		6.6
19 - no. per 1,000 acres	12.59	13.04	11.16		21.5
20 Farm employment, April 1 - Total	1,352	915	1,125		1,680
21 - % rural farm population	44.7	30.5	39.8		39.1
22 - % civilian employment	46.2	35.6	28.5		8.0
23 - no. per 1,000 acres	5.62	3.98	4.45		8.4
24 - average per farm	1.28	1.04	1.06		1.25

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

					Lassen County
	1930	1940	1950	1954	Ultimate
1 Number of farms - total	472	486	420	397	1,745
2 - irrigated farms	241	301	211	232	1,545
3 - non-irrigated farms	231	185	209	165	200
4 Land in farms - total (acres)	473,268	606,335	682,086	672,795	1,000,000
5 - irrigated farms	303,248	511,973	528,863	494,988	800,000
6 - non-irrigated farms	170,020	94,362	153,223	177,807	200,000
7 Irrigated land in farms (acres)	39,893	62,243	48,662	53,018	441,300
8 - % of land in farms	8.4	10.3	7.1	7.9	44.1
9 - % land in irrigated farms	13.2	12.2	9.2	10.7	55.2
10 - avg. per irrigated farm (acres)	165.5	206.8	230.6	228.5	285.6
11 Average size of farm (acres)	1,002.7	1,247.6	1,624.0	1,694.7	573
12 - irrigated farms	1,258.3	1,700.9	2,506.5	2,133.6	518
13 - non-irrigated farms	736.0	510.1	733.1	1,077.6	1,000
14 Farm population - total	2,199	2,115	1,665		7,850
15 - urban farm	-	-	6		-
16 - rural farm - total	2,199	2,115	1,659		7,850
17 - rural farm: avg. per farm	4.66	4.35	3.95		4.5
18 - % county population	17.5	14.6	9.0		11.6
19 - no. per 1,000 acres	4.65	3.49	2.43		7.8
20 Farm employment, April 1 - total	987	760	644		3,490
21 - % rural farm population	44.9	35.9	38.8		44.5
22 - % civilian employment	16.2	13.9	9.8		14.0
23 - no. per 1,000 acres	2.08	1.25	.94		3.5
24 - average per farm	2.09	1.56	1.53		2.0

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."



Table 60

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		County Modoc				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	621	686	823	749	1,850
2	- irrigated farms	418	532	655	569	1,756
3	- non-irrigated farms	203	154	168	180	94
4	Land in farms - total (acres)	450,139	583,189	680,694	673,897	750,000
5	- irrigated farms	310,471	471,868	597,095	595,917	702,400
6	- non-irrigated farms	139,668	111,321	83,599	77,980	47,600
7	Irrigated land in farms (acres)	70,025	92,419	133,869	124,772	352,100
8	- % of land in farms	15.6	15.8	19.7	18.5	46.9
9	- % land in irrigated farms	22.6	19.6	22.4	20.9	50.1
10	- average per irrigated farm (acres)	167.5	173.7	204.4	219.3	200.5
11	Average size of farm (acres)	724.9	850.1	827.1	899.7	405.2
12	- irrigated farms	742.8	887.0	911.6	1,047.3	400
13	- non-irrigated farms	688.0	722.9	497.6	433.2	500
14	Farm population - total	2,762	3,048	3,068		7,400
15	- urban farm	-	-	2		-
16	- rural farm - total	2,762	3,048	3,066		7,400
17	- rural farm: average per farm	4.45	4.44	3.72		4.0
18	- % county population	34.4	35.0	31.7		14.5
19	- no. per 1,000 acres	6.14	5.23	4.50		9.9
20	Farm employment, April 1 - total	1,320	1,161	1,128		2,775
21	- % rural farm population	47.8	38.1	36.8		37.5
22	- % civilian employment	35.6	34.9	30.2		15.0
23	- no. per 1,000 acres	2.93	1.99	1.66		3.7
24	- average per farm	2.13	1.69	1.37		1.5

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."



Table 61

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		Plumas County				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	178	167	159	151	400
2	- irrigated farms	119	130	100	95	375
3	- non-irrigated farms	59	37	59	56	25
4	Land in farms - total (acres)	167,446	160,513	150,621	164,004	200,000
5	- irrigated farms	98,666	145,510	114,822	127,000	180,000
6	- non-irrigated farms	68,780	15,003	35,799	37,004	20,000
7	Irrigated land in farms (acres)	16,774	29,481	24,516	22,001	107,900
8	- % of land in farms	10.0	18.4	16.3	13.4	54.0
9	- % land in irrigated farms	17.0	20.3	21.3	17.3	59.9
0	- average per irrigated farm (acres)	141.0	226.8	245.2	231.6	287.7
1	Average size of farm (acres)	940.7	961.2	947.3	1,086.1	500
2	- irrigated farms	829.1	1,119.3	1,148.2	1,336.8	480
3	- non-irrigated farms	1,165.7	405.5	606.8	660.8	800
4	Farm population - total	908	700	536		1,500
5	- urban farm	-	-	-		-
6	- rural farm - total	908	700	536		1,500
7	- rural farm; average per farm	5.10	4.19	3.37		3.75
8	- % county population	11.5	6.7	4.0		3.4
9	- no. per 1,000 acres	5.42	4.36	3.56		7.5
0	Farm employment, April 1 - total	385	281	187		500
1	- % rural farm population	42.4	40.1	34.9		33.3
2	- % civilian employment	8.8	6.3	3.7		3.1
3	- no. per 1,000 acres	2.30	1.75	1.24		2.5
4	- average per farm	2.16	1.68	1.18		1.25

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

Table 62

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		Shasta County				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	1,213	1,229	1,108	1,079	2,050
2	- irrigated farms	809	885	753	773	1,800
3	- non-irrigated farms	404	344	355	306	250
4	Land in farms - total (acres)	607,833	534,671	723,752	768,818	750,000
5	- irrigated farms	386,847	395,201	504,234	469,446	625,000
6	- non-irrigated farms	220,986	139,490	219,518	299,372	125,000
7	Irrigated land in farms (acres)	41,173	37,273	39,992	44,961	207,900
8	- % of land in farms	6.8	7.0	5.5	5.8	27.7
9	- % land in irrigated farms	10.6	9.4	7.9	9.6	33.3
10	- average per irrigated farm (acres)	50.9	42.1	53.1	58.2	115.5
11	Average size of farm (acres)	501.1	435.1	653.2	712.5	366
12	- irrigated farms	478.2	446.6	669.6	607.3	347
13	- non-irrigated farms	547.0	405.4	618.4	978.3	500
14	Farm population - total	4,447	5,163	4,116		8,200
15	- urban farm	53	23	16		-
16	- rural farm - total	4,394	5,140	4,100		8,200
17	- rural farm: average per farm	3.62	4.18	3.70		4.0
18	- % county population	31.6	17.8	11.3		4.2
19	- no. per 1,000 acres	7.23	9.61	5.66		10.9
20	Farm employment, April 1 - total	1,826	1,254	1,161		2,460
21	- % rural farm population	41.6	24.4	28.3		30.0
22	- % civilian employment	29.3	12.5	9.1		3.5
23	- no. per 1,000 acres	3.00	2.34	1.60		3.3
24	- average per farm	1.50	1.02	1.05		1.2

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		Sierra County				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	92	86	69	66	280
2	- irrigated farms	54	65	49	44	250
3	- non-irrigated farms	38	21	20	22	30
4	Land in farms - total (acres)	119,579	60,105	83,535	92,477	100,000
5	- irrigated farms	53,340	46,872	54,924	77,199	83,000
6	- non-irrigated farms	66,239	13,233	28,611	15,278	17,000
7	Irrigated land in farms (acres)	9,104	7,307	16,682	14,201	49,100
8	- % of land in farms	7.6	12.2	20.0	15.3	49.1
9	- % land in irrigated farms	17.1	15.6	30.4	18.4	59.2
10	- average per irrigated farm (acres)	168.6	112.4	340.4	1,322.7	196.4
11	Average size of farm (acres)	1,299.8	698.9	1,210.7	1,401.2	357
12	- irrigated farms	987.8	721.1	1,120.9	1,754.5	333
13	- non-irrigated farms	1,743.1	630.1	1,430.6	694.4	550
14	Farm population total	265	306	205		850
15	- urban farm	-	-	-		-
16	- rural farm - total	265	306	205		850
17	- rural farm; average per farm	2.88	3.56	2.97		3.0
18	- % county population	10.9	10.1	8.4		5.3
19	- no. per 1,000 acres	2.22	5.09	2.45		8.5
20	Farm employment, April 1 - total	136	110	67		300
21	- % rural farm population	51.3	35.9	32.7		35.3
22	- % civilian employment	10.7	8.5	8.4		5.2
23	- no. per 1,000 acres	1.14	1.83	.80		3.0
24	- average per farm	1.48	1.28	.97		1.1

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		Siskiyou County				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	1,155	1,208	1,000	970	2,344
2	- irrigated farms	744	915	681	698	2,144
3	- non-irrigated farms	411	293	319	272	200
4	Land in farms - total (acres)	627,704	699,496	879,904	961,344	950,000
5	- irrigated farms	415,855	589,742	653,121	735,577	850,000
6	- non-irrigated farms	211,849	109,754	226,783	225,767	100,000
7	Irrigated land in farms (acres)	58,655	91,783	100,525	93,552	343,200
8	- % of land in farms	9.3	13.1	11.4	9.7	36.1
9	- % land in irrigated farms	14.1	15.6	15.4	12.7	40.4
10	- average per irrigated farm (acres)	78.8	100.3	147.6	134.0	160.0
11	Average size of farm (acres)	543.5	579.1	879.9	991.1	405
12	- irrigated farms	558.9	644.5	959.1	1,053.8	400
13	- non-irrigated farms	515.4	374.6	710.9	830.0	500
14	Farm population - total	5,355	5,463	4,371		9,870
15	- urban farm	-	-	12		-
16	- rural farm - total	5,355	5,463	4,359		9,870
17	- rural farm: average per farm	4.64	4.52	4.36		4.2
18	- % county population	21.0	19.1	14.2		7.8
19	- no. per 1,000 acres	8.53	7.81	4.95		10.4
20	Farm employment, April 1 - total	2,190	1,900	1,484		3,920
21	- % rural farm population	40.9	34.8	34.0		39.8
22	- % civilian employment	19.3	17.0	12.7		8.5
23	- no. per 1,000 acres	3.49	2.72	1.69		4.1
24	- average per farm	1.90	1.57	1.48		1.7

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

Sutter County

		1930	1940	1950	1954	Ultimate
1	Number of farms - total	1,758	1,425	1,807	1,787	2,595
2	- irrigated farms	1,257	1,084	1,527	1,532	2,570
3	- non-irrigated farms	501	341	280	255	25
4	Land in farms - total (acres)	343,654	317,113	372,192	369,349	365,000
5	- irrigated farms	185,410	230,610	312,236	321,420	360,000
6	- non-irrigated farms	158,244	86,503	59,956	47,929	5,000
7	Irrigated land in farms (acres)	98,771	102,119	168,868	192,534	291,800
8	- % of land in farms	28.7	32.2	45.4	52.1	79.9
9	- % land in irrigated farms	53.3	44.3	54.1	59.9	81.1
10	- average per irrigated farm (acres)	78.6	94.2	110.6	125.7	113.5
11	Average size of farm (acres)	195.5	222.5	206.0	206.7	141
12	- irrigated farms	147.5	212.7	204.5	209.8	140
13	- non-irrigated farms	315.9	253.7	214.1	188.0	200
14	Farm population - total	8,158	8,179	8,735		12,450
15	- urban farm	70	45	11		-
16	- rural farm - total	8,088	8,134	8,724		12,450
17	- rural farm: average per farm	4.60	5.71	4.83		4.8
18	- % county population	55.3	43.5	33.2		10.2
19	- no. per 1,000 acres	23.53	25.65	23.44		34.1
20	Farm employment, April 1, total	4,285	2,848	3,457		5,190
21	- % rural farm population	53.0	35.0	39.6		41.7
22	- % civilian employment	65.3	49.7	38.7		11.0
23	- no. per 1,000 acres	12.47	8.98	9.29		14.2
24	- average per farm	2.44	2.00	1.91		2.0

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."



RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		Tehama County				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	1,805	1,744	1,718	1,707	2,760
2	- irrigated farms	953	981	1,141	1,280	2,560
3	- non-irrigated farms	852	763	577	427	200
4	Land in farms - total (acres)	1,195,796	1,227,205	1,131,660	1,161,699	1,100,000
5	- irrigated farms	394,095	447,830	323,606	598,908	920,000
6	-non-irrigated farms	801,701	779,375	808,054	562,791	180,000
7	Irrigated land in farms (acres)	32,110	34,453	38,440	50,766	297,200
8	- % of land in farms	2.7	2.8	3.4	4.4	27.0
9	- % land in irrigated farms	8.1	7.7	11.9	8.5	32.3
10	- average per irrigated farm (acres)	33.7	35.1	33.7	39.7	116.1
11	Average size of farm (acres)	662.5	703.7	658.7	680.6	399
12	- irrigated farms	413.5	456.5	283.6	467.9	359
13	- non-irrigated farms	941.0	1,021.5	1,400.4	1,318.0	900
14	Farm population - total	6,764	6,843	6,433		11,000
15	- urban farm	-	8	120		-
16	- rural farm - total	6,764	6,835	6,313		11,000
17	- rural farm: average per farm	3.75	3.92	3.67		4.0
18	- % county population	48.8	47.7	32.7		10.5
19	- no. per 1,000 acres	5.66	5.57	5.58		10.0
20	Farm employment, April 1, total	2,746	1,963	1,967		3,310
21	- % rural farm population	40.6	28.7	31.1		30.1
22	- % civilian employment	48.0	40.9	28.3		9.0
23	- no. per 1,000 acres	2.30	1.60	1.74		3.0
24	- average per farm	1.52	1.12	1.14		1.2

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."



Table 67

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		Trinity County				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	325	329	238	215	230
2	- irrigated farms	193	199	104	119	180
3	- non-irrigated farms	132	130	134	96	50
4	Land in farms - total (acres)	184,523	186,445	195,862	186,898	125,000
5	- irrigated farms	46,553	57,688	92,691	106,677	90,000
6	- non-irrigated farms	137,970	128,757	103,171	80,221	35,000
7	Irrigated land in farms (acres)	5,263	4,753	3,734	3,664	16,700
8	- % of land in farms	2.9	2.5	1.9	2.0	13.4
9	- % land in irrigated farms	11.3	8.2	4.0	3.4	18.6
0	- average per irrigated farm (acres)	27.3	23.9	35.9	30.8	92.8
1	Average size of farm (acres)	567.8	566.7	822.9	869.3	544
2	- irrigated farms	241.2	289.9	891.3	896.4	500
3	- non-irrigated farms	1,045.2	990.4	769.9	835.6	700
4	Farm population - total	1,191	1,175	688		700
5	- urban farm	-	-	-		-
6	- rural farm - total	1,191	1,175	688		700
7	- rural farm: average per farm	3.66	3.57	2.89		3.0
8	- % county population	42.4	29.6	13.5		3.2
9	- no. per 1,000 acres	6.45	6.30	3.51		5.6
0	Farm employment, April 1 - total	452	303	227		208
1	- % rural farm population	38.0	25.8	33.0		29.7
2	- % civilian employment	40.3	21.8	12.9		2.6
3	- no. per 1,000 acres	2.45	1.62	1.16		1.7
4	- average per farm	1.39	.92	.95		.9

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		County - Year				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	1,641	1,339	1,263	1,158	3,430
2	- irrigated farms	820	868	860	825	3,200
3	- non-irrigated farms	821	471	403	333	230
4	Land in farms - total (acres)	488,252	477,258	509,630	580,153	580,000
5	- irrigated farms	214,548	268,521	356,038	467,764	512,000
6	- non-irrigated farms	273,704	208,737	153,592	112,389	68,000
7	Irrigated land in farms (acres)	84,856	115,301	139,483	172,218	387,800
8	- % of land in farms	17.4	24.2	27.4	29.7	66.9
9	- % land in irrigated farms	39.6	42.9	39.2	36.8	75.7
10	- average per irrigated farm (acres)	103.5	132.8	162.1	208.7	121.2
11	Average size of farm (acres)	297.5	356.4	403.5	501.0	169
12	- irrigated farms	261.6	309.4	414	567.0	160
13	- non-irrigated farms	333.4	443.2	381.1	337.5	296
14	Farm population - total	8,814	9,100	6,861		16,000
15	- urban farm	94	18	82		-
16	- rural farm - total	8,720	9,082	6,779		16,000
17	- rural farm: average per farm	5.31	6.78	5.37		4.7
18	- % county population	36.9	33.3	16.7		4.1
19	- no. per 1,000 acres	17.86	19.03	13.30		27.6
20	Farm employment, April 1 - total	6,061	4,224	4,728		9,250
21	- % rural farm population	69.5	46.5	69.7		57.8
22	- % civilian employment	54.5	43.3	31.4		6.3
23	- no. per 1,000 acres	12.41	8.85	9.28		15.9
24	- average per farm	3.69	3.15	3.74		2.7

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."

RURAL FARM POPULATION AND EMPLOYMENT  
NORTHEASTERN CALIFORNIA COUNTIES  
1930-54 and Ultimate

		Yuba County				
		1930	1940	1950	1954	Ultimate
1	Number of farms - total	548	562	692	804	1,325
2	- irrigated farms	335	370	466	582	1,250
3	- non-irrigated farms	213	192	226	222	75
4	Land in farms - total (a)					
	(acres)	260,186	213,032	231,266	254,926	215,000
5	- irrigated farms	147,076	98,207	154,463	218,086	200,000
6	- non-irrigated farms	113,110	114,825	76,803	36,840	15,000
7	Irrigated land in farms					
	(acres)	30,248	24,538	36,310	56,810	168,500
8	- % of land in farms	11.6	11.5	15.7	22.3	78.4
9	- % land in irrigated					
	farms	20.6	25.0	23.5	26.0	84.3
10	- average per irrigated					
	farm (acres)	90.3	66.3	77.9	97.6	134.8
11	Average size of farm					
	(acres)	474.8	379.1	334.2	317.1	162
12	- irrigated farms	439.0	265.4	331.5	374.7	160
13	-non-irrigated farms	531.0	598.0	339.8	165.9	200
14	Farm population -					
	total	2,591	2,749	3,320		5,960
15	- urban farm	134	3	181		-
16	- rural farm - total	2,457	2,746	3,139		5,960
17	- rural farm: average					
	per farm	4.48	4.89	4.54		4.5
18	- % county population	21.7	16.1	12.8		5.7
19	- no. per 1,000 acres	9.44	12.89	13.57		27.7
20	Farm employment,					
	April 1 - total	1,898	1,126	1,264		2,265
21	- % rural farm population	77.2	41.0	40.2		38.0
22	- % civilian employment	35.2	20.8	16.7		6.0
23	- no. per 1,000 acres	7.29	5.28	5.47		10.5
24	- average per farm	3.46	2.00	1.83		1.7

Note: 1930 employment is per old definition: "persons 10 years old and over engaged in gainful occupations."



PART TWO

POTENTIAL ULTIMATE RECREATION DEVELOPMENT IN  
CALIFORNIA'S NORTHEASTERN COUNTIES, PREDICATED  
UPON FULL DEVELOPMENT OF NATURAL RESOURCES

## I. INTRODUCTION

The northeastern part of the State of California has an exceedingly colorful history woven from its streams and rivers, gold and silver mines and vast stands of pine and fir. Indians, Chinese, and Yankees, miners, woodsmen, trappers and cattlemen all have played a part in the fascinating drama of "Superior" California. The Chinese temple in Weaverville, the lava trenches of the Modoc War, Susanville's Fort Defiance, are historic reminders of this not so distant past.

Historical romance intrigues the historian and the tourist, but the modern-day resident of the area - the farmer, the lumber mill worker, the government employee, the small entrepreneur cannot live on the memories of the past. The economic life of individuals and business operations depends upon a stable, prosperous future. Declining economies in a number of the counties within this area indicate a need to evaluate the potential return from full development of the natural resources of the area.

### Recreation: a new "industry"

Historically, the economic life of the northern mountain counties has consisted of timber, mining and agricultural operations and related service industries. In recent years, however, recreation activity has increased rapidly.



to a position of major importance in the region's economy. There is now every reason to believe that its future volume will surpass the visions of the far-sighted men who some time ago formed the Shasta-Cascade Wonderland Association to inform the world of the resources of the northeastern mountain counties.

It appears evident the northeastern counties are on the threshold of enormous growth in the development and use of their recreation resources. These counties have some of the finest mountain country in the state. All or parts of eight national forests are included in their boundaries, plus one national park and one national monument. The pressure of population upon the older, more developed recreation areas of the state is sending more people into the northeastern counties already each year in search of recreation opportunities.

#### Recent increases in recreation use

Forest Service records show that in 1955 there were 8,351,600 visitor-days use of national forest recreation areas in the northeastern counties, compared with 2,958,500 only five years earlier. This increase of 182 percent in recreation use occurred during a period when state population was increasing 23 percent, and population of the northeastern county area increased only 10 percent. Thus it is clear that per capita use was increasing substantially.

This increase in recreation use reflects an increasing national propensity to spend more time in leisure and recreation activities. It has been estimated by the National Association of Travel Organizations that tourists in the United States in 1955 spent \$24,000,000,000 for recreation purposes, or about 7-1/2 percent of the national income. Recreation visits to the national parks and national forests in 1955 totalled 96,000,000, an increase of 140 percent over 1946. On a per capita basis, recreation visits more than doubled between 1946 and 1955 (U.S. Forest Service, Operation Outdoors, 1957).

In California, visitor-days use of the national parks and national forests increased from 23,085,000 in 1946 to 35,614,000 in 1955, an increase of 54 percent. State population increased 36 percent during this period.

#### Prospect of accelerated development

Present development of hotels, resorts, campgrounds and other facilities in the northeastern counties is relatively low. Despite the historic antiquity of the area, exploitation of its recreation resources is in its early stages. Thus the rate of development from this time forward to probable ultimate development can be expected to be very rapid, and to exceed the rate of state population growth by a considerable degree. Thus, although state population is expected to increase three or more times between now and ultimate development, recreation use of the northeastern county area may increase by 10 times or more.

Existing developed recreation facilities in the state and in the nation generally are inadequate to meet present demand, and a large "catching up" process in construction of facilities is urgently needed. For example, camp and picnic grounds in the national forests in 1955 had a safe, convenient and healthful capacity of about 17,600,000 visitor-days. Actual use was 25,500,000 visitor-days - an overload of 45 percent! At the rate of construction permitted by funds now available, the overload is expected to increase to 61 percent by 1958.

Comparable conditions are known to exist in the national forests and national parks in California. The State Park Commission has stated conservatively that "during the past several years, the demand for camp and picnicking sites has far exceeded the supply, and this will undoubtedly continue for some time in the future." (California State Park System, Five Year Master Plan, March 1, 1956).

Per capita use of outdoor recreation facilities will increase rapidly under the stimulation of higher incomes, a shorter work-week, longer vacations, improved transportation, and other benefits of an expanding technology. From 1950 to 1955 visitor-days in the National



# RECREATION USE OF NATIONAL FORESTS IN CALIFORNIA

In visitor days per capita\*

Projection of 1950-55 trend

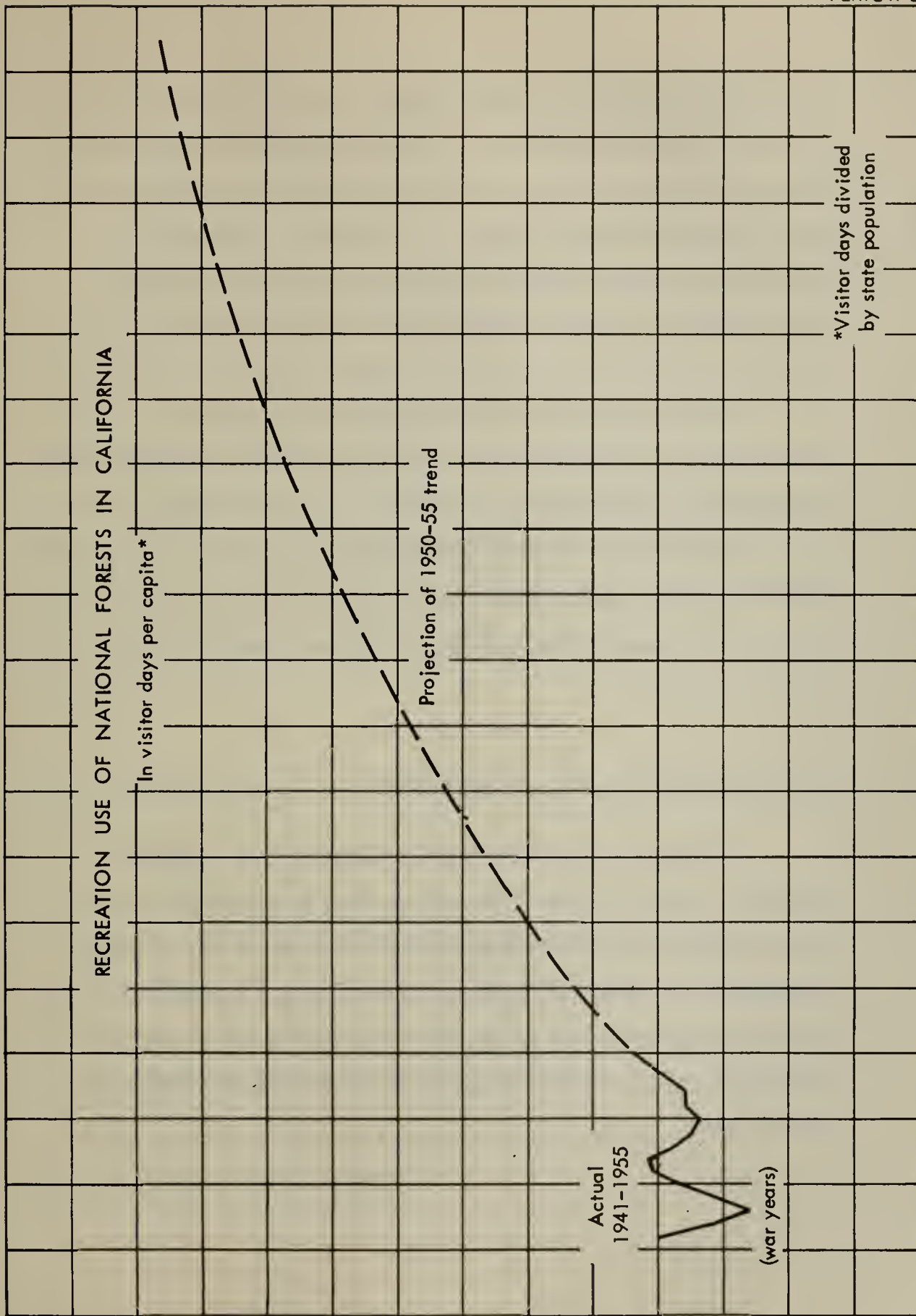
Actual  
1941-1955

(war years)

\*Visitor days divided  
by state population

VISITOR  
DAYS  
PER  
CAPITA

1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030



forests and National parks in California has increased from 1.6 per capita to 2.7 per capita, an annual increase of 0.2. One hundred years hence at this rate of increase, the per capita user days would exceed 20. Therefore, it may be conservatively estimated that annual use of California's national parks and national forests, now about three visitor-days per resident, will ultimately increase to something on the order of 10 visitor-days per year, or even more.

The projections set forth in the first part of this report indicate a state population, as of the period of probable ultimate development (2020-2050), of 45,000,000. On this basis, visitor-days use of national forests and national parks in California might approximate 450,000,000 - compared with an estimated 35,600,000 in 1955. (These estimates do not include visitor-days use of private resorts and other types of private recreation facilities, outside the national parks and national forests.)

#### Recreation use capacity of N. E. County Area

The survey of potential recreation areas described in the following pages indicates that the northeastern counties alone have the potential area and resources to accommodate this gross volume of recreation use, given the development of necessary public and private facilities. It is probable that actual use of recreation areas in the northeastern counties will be somewhat less than the capacity use estimated in this report, but will nevertheless be very substantial.



The water resources development projects proposed in the California Water Plan would contribute substantially to the achievement of such levels of recreation activity, as discussed below.

(If a state-wide inventory of potential recreation areas were available, which employed classifications and standards similar to those used in this survey of the northeastern counties, it would be possible to estimate with some precision how much of the state total of outdoor recreation activity might be accounted for by the northeastern counties. Lacking such inventory, it may be estimated very roughly that the northeastern county share of future outdoor recreation activity in the state may approximate one-third of the state total. It may be noted that the northeastern counties have 37 percent of the forested lands of the state. On the other hand, being inland counties they cannot provide the attractions of the "seashore.")

#### Foothill residential areas

The recreation use foreseen in this report includes the activities of the vacationer and tourist, the hunter and the fisherman. It also includes the establishment of permanent and summer homes by persons in retirement or semi-retirement, or having their place of work or business elsewhere, who are attracted to the area by its resources for relaxed, healthful living and immediate access to mountain recreation areas. The town of Paradise in Butte County is an example of this kind of development, which is expected to be duplicated in many parts of the area at elevations of 1,000 to 3,000 feet.

Professor David Weeks, who has done a number of studies of the Sierra foothills, believes there are very good prospects for clusters of population in the high foothills, around the 3,000-foot level. These are areas which also have a high potential, according to Weeks and others, for agricultural use with sprinkler irrigation, thus providing additional support for communities whose economic base will largely rest on services to residents.

## II. CLASSIFICATION AND MEASUREMENT OF RECREATION AREAS

In order to estimate the potential recreational use of the mountains, lakes, reservoirs and streams of the northeastern county area, it was necessary to develop assumptions and standards for classifying and measuring areas deemed suitable for development.

These standards are shown in Table 1. (following page 153).

The preparation of these standards followed review of existing recreation studies prepared by the National Park Service, the United States Forest Service and the State Division of Beaches and Parks and discussion with officials of these agencies.

In the application of these standards to each county, great reliance was placed on the experience and judgment of local officials and private citizens who knew the area intimately and who could delineate on maps the forests, lakes, streams and other features having existing or potential recreational value.

A survey of each county was made by air, accompanied by an experienced official, usually a Forest Ranger. Large areas of each county were also visited by automobile.

### Classification of recreation areas

To describe the characteristics of potential recreation areas in some detail, some 22 area classifications were used. For each of these classifications,

assumptions were made as to how much of the area could be developed (ranging from five to 60 percent), and what proportion of the developed areas was suitable for each of four types of major recreation facility: recreation residences, resorts, camping and picnic grounds, and organizational camps.

Density standards were also established for each type of recreation facility.

To illustrate: The R-1 classification in Table 1 includes areas which are usable for an average distance of one-half mile on each side of a stream or 640 acres per lineal mile of stream; it is assumed that 50 percent of such area is suitable for intensive development; it is further assumed that on the average the total developable area in an R-1 classification can be allocated as follows:

- 50 percent in recreation residences, at a density of one per acre;
- 30 percent in resort development, at a density of one unit per 15 acres;
- 20 percent in camp and picnic grounds, at a density of 2 family units per acre.

#### Area characteristics

Characteristics of each of the 22 area classifications are as follows:

## RECREATION AREA CLASSIFICATIONS

### General Characteristics

- R-1 Major rivers readily accessible to motor vehicles, having scenic, climatic, topographic, location and other resource values which will attract public and private recreation developments.
- R-2 Rivers and major tributaries accessible to motor vehicles as for R-1. Often have considerable fluctuation in usable valley width and steepness of canyon walls.
- R-3 Small rivers and tributaries accessible to motor vehicles as for R-1. Generally have steeper fall and intermittent flats and meadows.
- R-4 Tributaries and streams accessible to motor vehicles as for R-1. Generally have steeper fall and intermittent flats and meadows.
- R-1-R Reservoirs readily accessible to motor vehicles, having scenic, climatic, topographic, location and other resource values which will attract public and private recreation developments.
- R-2-R Reservoirs accessible to motor vehicles as for R-1-R. Often have considerable fluctuation in usable valley width and steepness of canyon walls.
- R-3-R Reservoirs accessible to motor vehicles as for R-1. Generally have steeper fall and intermittent flats and meadows.
- R-4-R Reservoirs accessible to motor vehicles as for R-1. Generally have steeper fall and intermittent flats and meadows.

- S-1 Major streams and tributaries in part inaccessible to motor vehicles also having scenic, climatic, topographic and location and other resource values which will attract public and private recreation development.
- S-2 Streams and tributaries in part inaccessible to motor vehicles, also having scenic, climatic, topographic and location and other resource values which will attract public and private recreation development.
- S-3 Medium to small streams in part inaccessible to motor vehicles, also having scenic, climatic, topographic and location and other resource values which will attract public and private recreation development.
- S-4 Small streams largely inaccessible to motor vehicles also having scenic, climatic, topographic and location and other resource values which will attract public and private recreation development.
- P-1 Primitive and wild areas of 200,000 acres or more preserved in natural state for camping, hiking, scientific study, fishing, etc.
- P-2 Primitive and wild areas of less than 200,000 acres and suitable for more intensive use.
- L-1 Lake areas inaccessible to motor vehicles.
- L-2 Lake areas accessible to motor vehicles.



- RA-1 Desirable middle to high altitude areas of conifers, meadows, and rock out-croppings suitable for fishing, hunting, camping and hiking, etc. and generally inaccessible to motor vehicles.
- RA-2 Desirable middle altitude areas of mixed conifers, aspen, streams, meadows, gentle topography.
- RA-3 Juniper-sage plateau, some pine, bitterroot, grassland, suitable for some fishing and hunting.
- H-1 Desirable major highway frontage where not included in other series, having scenic, topographic, location and other resource values; with primary emphasis on commercial development.
- H-2 Less desirable major highway frontage where not included in other series, having some scenic, topographic, location and other resource values with primary emphasis on commercial development.
- W Wildlife - waterfowl.

For presentation on maps, the 22 classifications were summarized in three groups, designated by the colors, "blue, green and brown" (see Table 1). These groupings may be described as follows:

Blue: Areas of prime recreation potential readily accessible by motor vehicle during the entire vacation season.

Green: Areas of prime recreation potential not readily accessible by motor vehicle. This may include some areas accessible by jeep.

Yellow: Accessible areas having limited recreation potential such as the wide juniper sage plateau of the Lahontan Basin, the dry ranges of the Eastern Cascade slope, and the middle altitude mesquite and manzanita forest. This includes wildlife areas. Primary recreation uses are hunting and fishing.

Lands adjacent to present urban centers, or areas likely to become urban and suburban in character have also been designated. Their estimated acreages by county are shown in Table 2. For mapping purposes they are shown in red.

Urban and suburban areas are expected to contain a large number of residences of persons moving into the northeastern county area because of its attractions for living.

## Recreation facility classification

Within the classifications of recreation land shown in Table 1, it is assumed that there would be four major types of facilities to make the areas usable for public recreation. These are:

Permanent and summer homes (recreation residences)

Commercial Recreation Uses (resorts, hotels, motels, restaurants, dude ranches, pack stations, etc.)

Campgrounds and picnic areas

Organizational camps

### 1. Permanent and summer homes.

According to demands for summer home sites within the United States National Forests, there will be an increasing trend for families to build summer and second homes in their favorite vacation areas. In addition, earlier retirement and longer lives are encouraging the construction of homes in desirable living areas previously considered financially impractical. There is also a tendency for families to move to the countryside to live on small farms with incomes supplemented by jobs in nearby urban centers.

### 2. Commercial recreation uses.

Commercial recreation uses, such as resorts, hotels, motels, restaurants, dude ranches, pack stations and related business activities. Almost

every public recreation area attracts service establishments patronized by vacationers. Other recreation areas are developed and served entirely by private business establishments; recreation is their means of livelihood.

### 3. Campgrounds and picnic areas.

These areas vary from roadside rests and camps providing urban conveniences for the motoring tourist to the inaccessible wilderness and timberline bivouacs reserved for those who are able to find them on foot or horseback.

### 4. Organizational camps.

Outing and camping programs for youths, adults, and families have increased so rapidly that today many California cities operate extensive facilities to serve their residents. Private summer camps for boys and girls and the wide camping programs sponsored by service organizations have exceeded the capacity of existing facilities in all parts of the state.

### County totals of potential recreation area (Table 2)

With the assistance of forest rangers and other county residents having expert knowledge, every stream, lake, reservoir, meadow, plateau

and primitive area in each county was classified and its capacity for potential recreation development was measured according to the standards and assumptions set forth in Table 1.

The results of this classification and measurement are presented, county by county, in Table 2.

### III. ESTIMATION OF RECREATION USE

The estimates of developable area presented in Table 2 provide a basis for estimation of potential user-days if facilities are developed and used to capacity. These estimates are shown in Table 3.

The estimates employ conservative assumptions as to average number of persons using a facility and length of season. Nevertheless, the estimates add up to a grand total of 463,000,000 user-days per year.

This total includes approximately 89,000,000 user-days representing direct use of existing and proposed reservoir areas (Table 4). Indirectly, water resource projects are bound to have a much larger effect, as without such projects development along many other streams would not occur. A reservoir project which contributes to stabilization of stream flow, for example, will stimulate downstream use by fishermen and campers, and will increase the demand for resorts, camp and picnic grounds beyond the immediate vicinity of the reservoir.

No adequate comparison can be made between the estimate of 463,000,000 user-days, which is for capacity use and includes both public and private facilities, and present recreation use. For one thing, no adequate data are available on present use of commercial and other private facilities. For national forest areas, for which records are kept, total use in 1955 is estimated at 8,350,000 visitor-days, including persons driving through the forests to enjoy scenic attractions. More significant than the present level of recreation use is its rapid increase in recent years, as discussed earlier in this report.



Estimated visitor-days for Shasta County include the Shasta Lake area, which in 1955 had an estimated 340,000 visitor-days of use. This is a small proportion of the 20,874,000 visitor-days estimated as potential capacity recreation use of reservoir areas in Shasta County.

For planning purposes, it is probably reasonable to assume, conservatively, that annual average use of recreation facilities at ultimate development will be about one-third of the capacity estimates. This indicates a total of about 150,000,000 visitor-days for the northeastern counties, including 30,000,000 visitor-days in reservoir areas.

#### Recreation benefit

A figure of \$2.00 per visitor-day is suggested for use in measuring recreation benefit. Use of this figure would give a total recreation benefit of approximately \$300,000,000 at full development, including \$60,000,000 in reservoir areas. \*

By comparison, \$300,000,000 is a little more than the value of 1955 agricultural production in the 15 northeastern counties (estimated by agricultural commissioners at \$287,392,000 f.o.b. farms), and about 50 percent more than the value of current annual timber production (estimated at about \$200,000,000 f.o.b. mills).

\* All estimates are in dollars of present purchasing power.

The \$2.00 figure has been selected after extensive review of the problem of measuring recreation benefit with government agencies and other organizations working in the recreation field. It is recognized that no single monetary measure will be accepted by all persons, but the concept of benefit from a visitor-day of use probably finds the widest acceptance. The \$2.00 figure is consistent with benefit figures currently used by Federal agencies for benefit-cost analysis, and is believed to understate recreation value from the point of view of public welfare and public policy.

The \$2.00 figure represents a judgment of the direct benefit to an average tourist, vacationer, sportsman, or other "recreationist" of a day in the outdoors, using the types of facilities indicated in this survey. It represents the intangible value of recreation, over and above expenditures for food, lodging, transportation, sporting equipment and other factors necessary or incidental to enjoyment of the recreation.

The latter factors may appear as indirect benefits to the local business community in the form of gross receipts for food, shelter, automobile fuel and service, sportswear and sporting equipment, etc. Recent surveys indicate that at current income and price levels, such expenditures average \$8.00 per visitor-day in the western states. (These studies are described in this consultant's report to the State Department of Water Resources on recreation potential of the Upper Feather River Basin).

### Relative contribution of counties to recreation benefit

The relative contribution of each county to estimated total recreation benefit is indicated by the following percentages, which represent each county's share of total estimated annual visitor-days use of recreation areas in the northeastern counties at full development:

PERCENTAGE OF POTENTIAL RECREATION USE (IN USER-DAYS)  
ACCOUNTED FOR BY EACH OF 15 NORTHEASTERN COUNTIES  
(based on Table 3)

Butte	5.4%
Colusa	2.4
Glenn	2.6
Lake	5.0
Lassen	7.9
Modoc	7.1
Plumas	10.0
Shasta	14.7
Sierra	3.3
Siskiyou	13.4
Sutter	1.3
Tehama	11.5
Trinity	9.5
Yolo	2.8
Yuba	3.1
	<hr/>
	100.0

The same proportions might also indicate very approximately the share of each county in potential expenditures for recreation purposes. However, it is very difficult to estimate the volume of recreation expenditures which would appear as receipts to business in each county. For one thing, the average of \$8.00 per visitor-day shown by available studies reflects primarily the expenditure of motorists visiting an area for a relatively brief period (several days up to two weeks). In the potential recreation development of the northeastern

counties, on the other hand, about one-third of total user-days are expected to be accounted for by recreation residences; families in such residences may have substantially different expenditure patterns from families who are traveling and spend much less time in an area.

Even where the \$8.00 per visitor-day figure (or a similar figure) applies, some of the expenditure is for food, gasoline, etc. enroute, and may not be spent in the county whose recreation area is the objective of the trip.

For crude estimating purposes, however, it may be said that at present price levels the total estimated annual recreation use of 150,000,000 visitor-days in the northeastern counties might involve something on the order of \$1,200,000,000 of expenditure ( @ \$8.00 per visitor-day) and that various counties might share in such expenditures roughly in proportion to their share of developed recreation facilities and potential user-days in the 15-county total.

To sum up, it does not seem unreasonable to estimate that the northeastern counties have the potential in natural resources to support recreation activity worth one billion dollars per year or more, at ultimate development and in present dollars, in gross receipts to the construction, retail and service industries of the area.

#### IV. RECREATION RESOURCES OF THE NORTHEASTERN COUNTIES

This section contains brief descriptions of the recreation resources of the northeastern counties, to indicate principal features suitable for recreation development.

The descriptions reflect the findings of the inventory of recreation resources discussed in Section II.

## Butte County

The climate, terrain, and accessibility of the foothill portions of Butte County have already encouraged a great diversity of recreation development which include a wide range of public and private activities. The community of Paradise located at about 2,000 feet elevation in the north central portion of Butte County is a notable example of a rapidly expanding resort, summer home, and retirement center. Similar low density rural communities will be duplicated many times in the future along the entire length of the Sierras, in some cases up to an elevation of 3,500 feet.

Butte County has many valuable natural resources that are especially suitable to encourage extensive resort and summer home development in the Sierra Foothills up to an elevation of 3,500 feet and public camping, hunting, hiking, skiing and related recreation activities at higher altitudes. Portions of The Lassen National Forest and Plumas National Forest lie within the county and comprise 12 percent of its land area.

The inventory of recreation resources indicates that approximately 25 percent of the gross area of the county is usable for permanent and summer homes, while an additional 11 percent of the county is suitable for group and family camps and resorts.



Extensive urban growth is anticipated around Chico and Oroville, particularly with the increased economic activity resulting from the construction of Oroville dam. Home building may extend from Oroville to Palermo and will doubtless expand in such valley towns as Gridley, Biggs, and small centers along the Sacramento River. In the Sierra foothills retirement homes and small farms are expected to follow the most desirable watercourses such as the Chico, Little Butte and Clear Creeks north to the county line. New water sources will change much of the high plateau range-land into a pattern of small farms, resorts, and retirement centers. In time almost all of Butte County's eastern slope will be made accessible. Resorts and public recreation areas will be interspersed among the living areas. At higher elevations these public facilities will be more extensive.

Proper planning of the county's recreation resources should set aside large wild life and wilderness areas along the Sacramento and Feather Rivers and some of the picturesque rim rock country of the lower Sierras.

### Colusa County

The rich agricultural lands of the Sacramento Valley and the dry oak-studded range land of the western foothills comprise most of the county. The introduction of water storage reservoirs, particularly those that will be maintained at a constant water level will change the character of the area and increase its desirability for building vacation homes and resorts.

The upper reaches of Big Stony Creek, Mill Creek and Little Stony Creek are desirable for camping, fishing and some resorts. The higher ridges between Colusa and Lake County have desirable forest recreation characteristics. The area east and south of East Park Reservoir is dry range and for recreation purposes suitable only for hunting and a few mineral spring health resorts.

The Sacramento River which flows along the eastern county boundaries is the greatest recreation resource in Colusa County. Potentially this wonderful river could provide a wide range of water recreation activities: camping, picnicking, resort development and choice permanent and summer home location and the reservation of large river primitive areas in order to preserve the beauties and powerful significance of this jugular vein of Northern California.

### Glenn County

Nearly one-fourth of Glenn County is in the Mendocino National Forest which reaches an altitude of over 7,000 feet. Good timber stands, many streams and springs and relatively easy access should result in continuing increase in use of this area.

Portions of this higher forested area would be most suitable preserved as an inaccessible wilderness and camping area. Medium altitude meadows and streams will attract campers, trailer camps, resorts and a sprinkling

of vacation homes, particularly along the upper reaches of Grindstone Creek, Salt Creek, and the middle fork of Stony Creek and on the western slope along Black Butte Creek and its tributaries.

Below 2,500 feet elevation digger pines and native oaks indicate a dry grazing zone suitable for hunting but discouraging to other recreation pursuits except immediately along the major streams.

Stony Gorge Reservoir located in the foothills above the Sacramento Valley floor, attracts over 1,000 water sports enthusiasts during a Sunday for a four-month season even without facilities available to encourage this use. This is evidence that reservoirs built in this hot, dry foothill area will substantially increase the recreation potential of the county.

Bird refuges are important recreation resources of Glenn and other Valley counties and should receive considerable planned expansion to maintain the Pacific Flyway and meet the increasing hunting pressures. The Sacramento River is a major recreation resource that is receiving considerable increased use without proper controls to ensure orderly resort, summer home, and camping development and to preserve portions of the primitive river and wildlife scene.

## Lake County

Of the 15 northeastern counties under investigation Lake County is unique. The ability of this county to attract a large population may be surmised from the historic record of a dense Indian population which enjoyed the natural abundance of foods and the mild climate.

Although Lake County is one of the smallest of the northeastern counties it is one of the richest in natural recreation resources. Lying entirely within the coast range the southern portion of the county is typical foothill country of rolling hills, numerous streams and upland valleys. North of Clear Lake the terrain becomes more rugged with extensive lumber stands within the Mendocino National Forest. The recreation resources of the county have already been extensively developed. Resorts, homes and public parks around Clear Lake, the Blue Lakes and to a lesser extent Pillsbury Lake indicate the attractiveness of such natural or man-made water resources.

The inventory of recreation land indicates that approximately 30% of the county is suitable for permanent and summer homes and the expansion of urban centers. Approximately seven percent could be used for a wide range of resorts and approximately 14.2 percent for family and group camping activities.

Field investigations and conferences with county officials confirm the trend of increased construction of retirement homes and small farms. Sprinkler irrigation has made possible the planting of fruit and nut orchards in the hill areas. The favorable climate and easy commuting to the metropolitan area is encouraging large numbers of retired, semi-retired and week-end commuters to buy 5 or 10 acre orchards. There are strong indications that much of the county will become a bedroom satellite of the Bay Area.

A sampling of resort activity reveals an increase of 50 percent to 100 percent during the past year. Boating on Clear Lake has increased many times over in recent years according to experts close to this activity, though only 20 percent of the accessible shoreline is being used for recreation purposes. The mild climate favors the gradual increase of the tourist season to a 12 month operation. In addition to the usual resort development there is already a noticeable trend to construct golf courses and private and resort airports for pleasure aircraft.

### Lassen County

Geographically the Lahontan Plain which covers most of Lassen County seems unrelated to other parts of Northern California. Perhaps this remoteness is partly responsible for the relatively undeveloped state of the recreation resources of the region.

National forests - Lassen, Modoc, and Plumas - cover 21 percent of the county's area. The inventory of recreation potential showed that the county has a relatively high potential user day capacity with major emphasis on camping and outing experiences and somewhat lesser potential for the building of resorts, and vacation homes.

The mild summer climate will encourage extensive use of the forest, many lakes and streams in the western half of the county. The Blue Lakes region in the southern end of the Warner Range, only recently discovered by the public, is an example of the excellent and as yet unused and unspoiled recreation resources in the county.

The extensive Pit River Watershed including Horse, Davis, Juniper, Willow and Ash Creeks provide opportunities for extensive camping and resort possibilities as well as centers for the best hunting field of Central and Eastern Lassen County. Such creeks as Red Rock, Snake and Buckstrom Canyon and a number of lakes and reservoirs along the eastern portion of the county provide recreation areas similar to the popular dry plateau vacation lands of Arizona and New Mexico.

Lassen Volcanic National Park and the Caribou Peak wild area are a small part of the choice vacation land that falls within Lassen County. Without question a large part of Lassen County's future depends on the wise use of these natural resources.

Eagle Lake, located approximately 17 miles northwest of Susanville promises to have a bright recreation future as a large resort or vacation center.



Plans are now underway to maintain a constant level on this large inland lake , to provide paved road access and encourage the construction of resorts and summer home tracts. Susanville, the county seat, is already recognized as the hub of a wide range of recreation facilities, including winter sports, hunting, fishing, boating and family and group camping.

### Modoc County

From a scenic and recreation viewpoint Modoc County is a land of contrasts with features ranging from lava beds with ice caves, and a labyrinth of underground passages to the great inland seas of Goose Lake and the Upper, Middle and Lower Alkali Lakes of Surprise Valley. Over half of the county is included in the Modoc National Forest. The wild and primitive Warner Mountains with extensive forests, perennial streams and small lakes, all are potential vacation lands which contrast with the broad juniper and bitter-weedplains in the south central parts. The great 30,000 head herd of muletail deer that migrate south from Oregon have made hunting the major recreation activity. A short season of goose and duck shooting is also a major attraction for sportsmen.

As with Lassen County, Modoc County has a very promising recreation future providing that the use of these natural wonders is carefully planned to protect the delicate natural balance between flora and fauna in this water deficient area. The development of family camping areas, attractive

trailer parks and access to the many points of scenic interest will lengthen the recreation season and increase the importance to the county of this segment of the economy.

The balanced development of these scenic and wildlife resources also require the preservation of large wild life and game refuges and primitive areas. Guided by wise planning even the famous Modoc antelope may be returned to their former strength.

### Plumas County

The boundaries of Plumas County coincide roughly with those of the Plumas National Forest, which occupies about 70 percent of the county. The rough terrain of the Sierra Nevada is here relieved by arable valleys - Sierra, Indian, American, Mohawk, and Genessee - and by the splendid watercourse of the Feather River and its tributaries.

Plumas County offers the tourist, vacationer, sportsman and other "recreationist" the finest in mountain scenery, environment, and sports opportunities, including winter sports.

(No detailed description of recreation areas in Plumas County is given here because, pursuant to contract, such is included in a separate report to the State Department of Water Resources on the recreation potential of the Upper Feather River Basin.)

## Shasta County

Shasta County may be considered the central show window of the recreation resources of Northern California because of its strategic location at the head of the great Sacramento Valley and because of its great variety of recreation resources, including deep canyons and high mountain peaks, dense forest and sun-scorched valleys, the headwaters of the mighty Sacramento River and secluded upland streams and meadows. These are a few of the easily accessible recreation resources to be sampled and enjoyed, and that inevitably lead to further exploration into the more inaccessible back country in Trinity, Siskiyou, Modoc and Lassen Counties.

As shown on the recreation resource map, there are many desirable recreation residence and resort locations in the county, especially along Hat and Montgomery Creeks and around the Castle Crags and the Castella areas. Urban expansion around Redding will probably extend eastward and south to the Tehama County border. In the Happy Valley and Balls Ferry area there are many examples of the conversion of larger farm holdings into small residence farms of from two to 10 acres. This pattern will be extended over large parts of this rich river bottom land to form a very low density and decentralized urban community. A relatively large proportion of the population that will settle in the Redding area will probably be retired, having been attracted to this scenic and enjoyable land to relax and "live" away from the congestion of metropolitan areas.

About one-fourth of the county area has recreation potential which is divided fairly evenly between possible public and private development. Estimates of capacity user days at ultimate development are higher than for any other of the 15 northeastern counties (Table 3).

### Sierra County

Although small in total gross area Sierra County could devote about one-third of its rugged streams to recreation activities. The Yuba River watershed accounts for the very high potential even though at present access is limited to state highways #49 and #89. The yearly capacity use of the camping and resort facilities of the Lakes Basin Recreation Area indicates the desirability of these resources for family camping and sportsman fishing and hunting. The eastern end of the county, being less precipitous forest land and including the southerly portion of Sierra Valley has many recreation streams of high recreation value, including the little Truckee River.

The Sacramento and San Francisco Bay Metropolitan populations are already placing heavy pressure on these forests because of their proximity to these expanding urban centers. Certainly with proper long range planning, the recreation resources of the Sierra County will become the major economic activity.

## Siskiyou County

The largest and most rugged county in the area provides some of its finest scenery. A few of its scenic areas have already been protected within the Klamath National Forest as primitive and wild areas. These include the Marble Mountains which are famous for their Alpine beauty and are attracting more and more people to pack and hike into these remote regions. The recreation resource inventory shows that all of the streams have a high potential for a balanced recreation development with emphasis on small less accessible streams for organization camping.

The towns of Etna and Fort Jones in Scott Valley are reminiscent of a Swiss setting nestled among high forested mountains and watered by white water streams. Such restful spots are ideally suited to accommodate dude ranches and resorts developed to harmonize with the relaxed country environment. The proposed ski and winter sports development at Mt. Shasta Recreation Area and the use of Medicine Lake by increasing vacationists are two examples of current interest in large scale recreation potentials in Siskiyou County. The Klamath National Forest lies entirely within the western portion of the county. Forest Service personnel recognize the increasing pressure for fine recreation areas and are making good progress in coordinating the planning for multi-use of the forest. Most of Siskiyou has recreational potential and it is only a question of time when the primary problems will relate to planning and building camps, resorts, and vacation houses fast enough to meet the accelerating state-wide demands.

Along the Klamath River and at the mouth of each tributary summer resorts, public camps and vacation homes will be built. The Salmon River, Trout Creek and Butte Creek are examples of locations where camps and cabins can be expected eventually. The development of Shasta Springs as a group camp and summer religious center is an example of a recreation activity that will probably increase in Siskiyou County.

### Sutter County

The primary recreation resources of Sutter County are the waters of the Feather and Sacramento Rivers, which have so far received only incidental protection or development. Potentially these waterways can provide enjoyment for many people including water sports enthusiasts, campers, river tourers, birdwatchers, fishermen, farmers and other residents along the rivers. However, many spots along the river banks are now being used for dumping grounds and other inappropriate uses. Pollution of the river waters is common today and if continued will destroy the recreation values that nature so freely provided.

Because Sutter County is small and lacks the variety of recreation resources that other northeastern counties have, it has a special incentive to protect and develop its river recreation areas.



## Tehama County

Reaching from the crest of the Coast Range across the upper end of the Sacramento Valley and high up in the Sierra slope, Tehama County has a great variety of natural recreation resources. Portions of four national forests (Lassen, Shasta, Trinity, and Mendocino) include approximately 20 percent of the County's area. These forests possess many desirable fishing streams, particularly in the Lassen forest where there are many suitable spots for vacation homes, resorts and extensive camping for families and organizations. Winter sports areas are already being developed near Lassen Volcanic National Park and several favorable sites are being considered at high elevations on the Coast Range. Below the timber line particularly on the west side of the valley the recreation potential is limited to hunting of deer and upland birds. However, the construction of reservoirs in these western foothills will attract heavy recreation use if desirable operation characteristics are maintained.

About one-fourth of the County has potential for homes, resorts, and camping, under optimum conditions.

As with other Valley counties, the Sacramento River provides Tehama County with a large recreation potential for active use and passive enjoyment. This resource, unlike the inaccessible mountains, has been sadly neglected, misused and polluted. With rising recreation demand it will become increasingly urgent to stop these practices and inaugurate constructive measures to protect one of the major recreation resources of Northern California.

## Trinity County

In the remote and inaccessible parts of southern Trinity County are said to live mountain folk who have never seen the outside world. True or not, there is little question that all of this rugged mountain country is a paradise for the devoted camper, packer and mountaineer. Without doubt recreation use will ultimately be Trinity County's largest economic activity. The many secluded and wonderful valleys that now support a limited agricultural economy lend themselves to resort and vacation home use as already exist along Coffee Creek, around Trinity Center, and in the Hayfork and Wildwood areas. The preservation of the Salmon Trinity and Yolla Bolly Wilderness areas are tribute to the foresight of the Forest Service in protecting some of the finest scenic country in America. Such planning should extend to many other areas throughout the "Shasta-Cascade Wonderland".

Four U. S. Forests (Mendocino, Shasta, Trinity and Six Rivers) cover two-thirds of this county, indicating the extent of the national forest. The estimates of ultimate recreation use indicate that about 15 percent of the gross area of the county has recreation value and when fully developed could contain facilities sufficient to accommodate approximately 44,000,000 visitor-days per season at capacity use, or nearly 10 percent of the total use estimated for all of the 15 northeastern counties.

## Yolo County

Yolo County is expected to receive a larger percentage of the urban population than any other of the northeastern counties. This population concentration will require that special attention be given to the proper and full utilization of the relatively limited recreation resources of the county. The Sacramento River along the easterly county line is the greatest natural resource, and has great potential for boating and water sports, home sites and resorts. Public access to the river is an immediate problem which, unless adequately provided before the cost is prohibitive, will seriously limit the full use of the Sacramento River and its tree-lined shores.

The western boundary of the county follows the crest of the Vaca Mountains which presently have a limited recreation potential. Hunting is a major attraction in this area.

Monticello Reservoir now under construction on Putah Creek and particularly the Monticello Dam Afterbay will attract great numbers of day and weekend people as well as extensive summer home and resort construction. Water, as a new reservoir or a freshened stream, will give new recreation life to the western hill country of Yolo County.

## Yuba County

The description of recreation values of Butte County apply in large measure to Yuba County which lies just to the south. The number of small, pleasant towns such as Brownsville, Challenge, Comptonville, give an indication of the desirable character of the Sierra foothills for rural living. As most of the county is readily accessible it has been estimated from the recreation resource inventory that more than 20 percent of the total area has potential for family and group camping, vacation cabins and permanent homes and a wide range of resort and overnight accommodations. About 12 percent of the county is covered by the Plumas and Tahoe National Forest.

## TABLES (PART TWO)





Table 1

d Picnicking Areas, etc.....			..... Organizational Camps, etc.....		
per Acre	Units/ Lineal Miles	%	Acres	Units per Acre	Units/ Lineal Miles
2	128				
2	54				
2	50	5	4	1 in 40 acres	1 camp per 10 mi.
2	34	5	2	1 in 40 acres	river per 20 mi.
2	128				river
2	54				
2	50	5	4	1 in 40 acres	1 camp per 10 mi.
2	34	5	2	1 in 40 acres	river per 20 mi.
acres		10			
acres		10			
centage per unit					
" per unit					
2	96	15	14	1 in 40 acres	1 camp per :
2	48	15	7	1 in 40 acres	3 miles river
2	32	15	5	1 in 40 acres	6 miles river
2	16	15	2	1 in 40 acres	8 miles river
acres		40		1 in 40 acres	20 miles river
acres		30		1 in 40 acres	
per 200 acres					
acres* (including trailer parks		10		1 in 40 acres	

eel mileage

real mileage x .75

real mileage x .325

arks



STANDARDS USED TO CLASSIFY AND MEASURE  
POTENTIAL RECREATION AREAS  
Recreation Standards Chart  
Area Suitable for Average Development

Recreation Area Classification	Total Area Classified For Recreation Development			Total Intensive Recreation Development		..... Permanent and Summer Homes .....				Resorts, Pack Stations, Restaurants, Hotels, Etc. ....				..... Camping and Picnicking Areas, etc.....				..... Organizational Camps, etc.....			
	Distance from Each Side of Stream	Acres per Lineal Mile	%	Acres per Lineal Miles	%	Acres	Units per Acre	Units/Lineal Miles	%	Acres	Units per Acre	Units/Lineal Miles	%	Acres	Units per Acre	Units/Lineal Miles	%	Acres	Units per Acre	Units/Lineal Miles	
R1	Blue"	1/2 mile	640	50	320	50	160	1	160	30	96	1 in 15 acres	19	20	64	2	128				
R2	"	1/4 mile	320	40	128	50	64	1	64	30	38	1 in 15 acres	8	20	26	2	54				
R3	"	3/16 mile	240	30	72	40	29	1	29	20	14	1 in 15 acres	3	35	25	2	50	5	4	1 in 40 acres	1 camp per 10 mi.
R4	"	1/8 mile	160	30	43	40	19	1	19	20	10	1 in 15 acres	2	35	17	2	34	5	2	1 in 40 acres	1 camp per 20 mi.
R1R	"	1/2 mile	640	50	320	50	160	1	160	30	96	1 in 15 acres	19	20	64	2	128				
R2R	"	1/4 mile	320	40	128	50	64	1	64	30	38	1 in 15 acres	8	20	26	2	54				
R3R	"	3/16 mile	240	30	72	40	29	1	29	20	14	1 in 15 acres	3	35	25	2	50	5	4	1 in 40 acres	1 camp per 10 mi.
R4R	"	1/8 mile	160	30	48	40	19	1	19	20	10	1 in 15 acres	2	35	17	2	34	5	2	1 in 40 acres	1 camp per 20 mi.
RA2	"			40		20		1 unit per 3 acres		20		1 in 15 acres		50*		1 in 3 acres		10			
L2	"			60		40		1 unit per 2 acres		15		470' frontage		35*		1 in 2 acres		10			
H1	"			15						80)		( 470' frontage per unit		20*		470' frontage per unit					
H2	"			5						80)		( per unit		20*		" " per unit					
S1	"	1/4 mile	320	30	96	20	19	1	19	15	14	1 in 15 acres	3	50	48	2	96	15	14	1 in 40 acres	1 camp per : 3 miles river
S2	Green	3/16 mile	240	20	48	20	10	1	10	15	7	1 in 15 acres	15	50	24	2	48	15	7	1 in 40 acres	6 miles river
S3	"	1/8 mile	160	20	32	20	6	1	6	15	5	1 in 15 acres	1	50	16	2	32	15	5	1 in 40 acres	8 miles river
S4	"	1/16 mile	80	20	16	20	3	1	3	15	2	1 in 15 acres	1/2	50	8	2	16	15	2	1 in 40 acres	20 miles river
RA1	"			20										60		1 in 3 acres		40			
L1	"			50										70		1 in 3 acres		30			
Primitive	"			100								( 1 pack station per				1 camp per 200 acres					
River Prim."	"			10								( 10,000 acres									
RA3	Brown			10										30*		1 in 3 acres* (including trailer parks		10		1 in 40 acres	
Wildlife	"			100		20		1 unit per 3 acres		40		1 in 15 acres									

Blue: Represents areas accessible for maximum recreational use  
Green: Represents inaccessible areas of maximum recreational use  
Brown: Represents accessible areas of limited recreational use

R1R, etc.: Divide lineal miles by "2" and proceed  
Rivers dividing counties - take 1/2 lineal measurement

To Measure "Quads":  
62,500 quad: - wheel mileage  
48,000 quad: - lineal mileage x .75  
24,000 quad: - lineal mileage x .325

\* includes trailer parks



TABLE 2

Acres in Potential Recreation Areas  
and Urban Areas

## BUTTE COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	104,960	52,480	26,240	15,744	10,496	
R2	51,520	20,608	10,304	6,183	4,121	
R3	19,320	5,796	2,319	1,159	2,028	290
R4	2,960	888	355	178	311	44
S1						
RA2	182,390	72,956	14,592	14,592	36,478	7,297
H1	285	43		34	9	
H2						
R1R	66,020	33,010	16,505	9,904	6,603	
R2R						
L2	10,170	6,102	2,441	915	2,136	610
	<u>437,625</u>	<u>191,883</u>	<u>72,756</u>	<u>48,709</u>	<u>62,182</u>	<u>8,241</u>
<u>Green:</u>						
S2						
S3						
S4						
RA1						
Primitive						
<u>Brown:</u>						
RA3						
Wildlife	9,620					
<u>Red:</u>						
Urban	<u>191,460</u>					
Totals by columns	638,705	191,883	72,756	48,709	62,182	8,241



Table 2-b

## COLUSA COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	43,360	21,680	10,840	6,504	4,336	
R2	12,000	4,800	2,400	1,440	960	
R3	1,440	432	173	87	151	21
R4	5,920	1,776	710	355	622	89
S1	7,040	2,112	422	317	1,056	317
RA2	80,642	32,257	6,451	6,451	16,129	3,226
H1	294	44		35	9	
H2						
R1R	15,360	7,680	3,840	2,304	1,536	
R2R						
L2						
Total	166,056	70,781	24,836	17,493	24,799	3,653
<u>Green:</u>						
S2	8,280	1,656	331	249	828	249
S3	7,440	1,488	298	223	744	223
S4	1,520	304	61	46	152	46
RA1						
Primitive						
L1	320	160			112	48
Total	17,560	3,608	690	518	1,836	566
<u>Brown:</u>						
RA3	86,560	8,656	1,731	3,462	2,597	866
Wildlife	48,662					
Total	135,222	8,656	1,731	3,462	2,597	866
<u>Red:</u>						
Urban	9,540					
Totals by columns	328,378	83,045	27,257	21,473	29,232	5,085

## GLENN COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organiz- ational Camps
<u>Blue:</u>						
R1	32,480	16,240	8,120	4,872	3,248	
R2						
R3						
R4						
S1	13,920	4,176	835	627	2,088	627
RA2	122,874	49,150	9,830	9,830	24,574	4,913
H1	172	26		21	5	
H2						
R1R	24,160	12,080	6,040	3,624	2,416	
R2R						
L2	426	256	102	38	90	26
Total	194,032	81,928	24,927	19,012	32,421	5,566
<u>Green:</u>						
S2	23,880	4,776	955	716	2,388	716
S3	14,640	2,928	585	440	1,464	440
S4	2,880	576	115	86	288	86
RA1						
Primitive						
Total	41,400	8,280	1,655	1,242	4,140	1,242
<u>Brown:</u>						
RA3						
Wildlife	32,740					
<u>Red:</u>						
Urban	3,520					
Totals by columns	271,692	90,208	26,582	20,254	36,561	6,808

## LAKE COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	44,004	22,002	11,001	6,601	4,400	
R2	76,960	30,784	15,392	9,236	6,157	
R3	840	252	101	50	88	13
R4	7,360	2,208	884	440	772	112
S1						
RA2	436,030	174,412	34,882	34,882	87,206	17,441
H1						
H2						
R1R	11,020	5,510	2,755	1,653	1,102	
R2R	320	128	64	38	26	
L2						
Total	576,534	235,296	65,079	52,900	99,751	17,566
<u>Green:</u>						
S2	600	120	24	18	50	18
S3						
S4						
RA1						
Primitive						
Total	600	120	24	18	50	18
<u>Brown:</u>						
RA3						
Wildlife	29,940					
<u>Red:</u>						
Urban	102,160					
Totals by columns	709,234	235,416	65,103	52,918	99,801	17,584

## LASSEN COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	36,800	18,400	9,200	5,520	3,680	
R2	43,200	17,280	8,640	5,184	3,456	
R3	32,980	9,895	3,958	1,979	3,463	495
R4	14,560	4,368	1,747	874	1,529	218
S1						
RA2	501,451	200,580	40,116	40,116	100,290	20,058
H1	719	108		86	22	
H2	81	12		10	2	
R1R	33,920	16,960	8,480	5,088	3,392	
R2R	10,160	4,064	2,032	1,219	813	
R3R	6,770	2,031	812	406	711	102
R4R	740	222	89	44	78	11
L1						
L2	11,150	6,690	2,676	1,044	2,342	669
Total	681,381	280,610	77,750	61,530	119,778	21,553
<u>Green:</u>						
S3						
S4						
RA1						
Primitive	27,882					
S2						
L1	5,620	2,810			1,967	843
Total	33,502	2,810			1,967	843
<u>Brown:</u>						
RA3	1,524,996	152,500	30,500	61,000	47,750	15,250
Wildlife	45,070					
Total	1,570,066	152,500	30,500	61,000	47,750	15,250
<u>Brown:</u>						
Urban	14,860					
Totals by columns	2,299,809	435,920	108,250	122,530	167,495	37,646

## MODOC COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	30,721	15,361	7,681	4,608	3,072	
R2	61,920	24,768	12,384	7,430	4,954	
R3	23,520	7,056	2,822	1,411	2,470	353
R4	16,560	4,968	1,987	994	1,739	248
S1						
RA2	383,068	153,227	30,645	30,645	76,614	15,323
H1	759	114		91	23	
H2						
R1R	23,360	11,680	5,840	3,504	2,336	
R2R	8,800	3,520	1,760	1,056	704	
R3R	9,720	2,916	1,166	583	1,021	146
R4R	3,360	1,008	403	202	353	50
L2	15,360	9,216	3,686	1,382	3,226	922
Total	577,148	233,834	68,374	51,906	96,512	17,042
<u>Green:</u>						
S2						
S3						
S4						
RA1						
Primitive	69,240					
S2						
L1	320	160			112	48
Total	69,560	160			112	48
<u>Brown:</u>						
RA3	1,425,670	142,567	28,513	57,027	42,770	14,257
Wildlife	63,420					
Total	1,489,090	142,567	28,513	57,027	42,770	14,257
<u>Red:</u>						
Urban	20,900					
Total Acres by columns	2,156,698	346,561	96,887	108,933	139,394	31,347

## PLUMAS COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	115,680	57,840	28,920	17,352	11,568	
R2	19,760	7,904	3,952	2,371	1,581	
R3	12,960	3,888	1,555	778	1,361	194
R4	160	48	19	10	17	2
S1	960	288	58	43	144	43
RA2	890,427	356,171	71,234	71,234	178,086	35,617
H1						
H2						
R1R	68,000	34,000	17,000	10,200	6,800	
R2R						
L2	14,890	8,934	3,574	1,340	3,127	893
Total	1,122,837	469,073	126,312	103,328	202,684	36,749
<u>Green:</u>						
S2						
S3	480	96	19	14	48	14
S4						
RA1	133,670	26,734			16,040	10,694
Primitive	48,180					
L1	3,960	1,980			1,386	594
Total	186,290	28,810	19	14	17,474	11,302
<u>Brown:</u>						
RA3	43,000	4,300	860	1,720	1,290	430
Wildlife						
<u>Red:</u>						
Urban	10,560					
Total acres by Columns	1,362,687	502,183	127,191	105,062	221,448	48,481



## SHASTA COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	113,120	56,560	28,280	16,968	11,312	
R2	105,060	42,024	21,012	12,607	8,405	
R3	55,080	16,524	6,610	3,305	5,783	826
R4	41,440	12,432	4,973	2,486	4,351	622
S1	2,560	768	154	115	384	115
RA2	696,350	278,540	55,708	55,708	139,270	27,854
H1	562	84		67	17	
H2						
R1R	173,420	86,710	43,355	26,013	17,342	
R2R	53,310	21,324	10,662	6,397	4,265	
L2	3,220	1,932	773	290	676	193
Total	1,244,122	516,898	171,527	123,956	191,305	29,610
<u>Green:</u>						
S2	21,240	4,248	850	637	2,124	637
S3	6,240	1,248	250	187	624	187
S4	8,200	1,640	328	246	820	246
RA1						
Primitive	61,740					
L1	1,880	940			658	282
Total	99,300	8,076	1,428	1,070	4,226	1,352
<u>Brown:</u>						
RA3 Wildlife	483,380	48,338	9,668	19,335	14,501	4,834
<u>Red:</u>						
Urban	151,930					
Total acres by columns	1,978,732	573,312	182,623	144,361	210,532	35,796



## SIERRA COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	12,160	6,080	3,040	1,824	1,216	
R2	22,720	9,088	4,544	2,727	1,817	
R3	3,120	936	374	187	328	47
R4						
S1						
RA2	403,560	161,424	32,285	32,285	80,713	16,142
H1						
H2						
R1R	12,800	6,400	3,200	1,920	1,280	
R2R						
L2	11,680	7,008	2,803	1,051	2,453	701
Total	466,040	190,936	46,246	39,994	87,807	16,890
<u>Green:</u>						
S2						
S3						
S4						
RA1						
Primitive						
L1						
<u>Brown:</u>						
RA3						
Wildlife						
<u>Red:</u>						
Urban	6,050					
Totals by columns	472,090	190,936	46,246	39,994	87,807	16,890

## SISKIYOU COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational camps
<u>Blue:</u>						
R1	128,640	64,320	32,160	19,296	12,864	
R2	3,398	1,359	680	408	272	
R3	49,920	14,976	5,990	2,995	5,242	749
R4	23,923	7,177	2,871	1,435	2,512	359
S1	68,500	20,550	4,110	3,083	10,275	3,083
RA2	276,175	110,470	22,094	22,094	55,235	11,047
H1	514	77		62	15	
H2	34	2		2		
R1R	125,760	62,880	31,440	18,864	12,576	
R2R						
L2	24,446	14,668	5,867	2,200	5,134	1,467
Total	701,310	296,479	105,212	70,439	104,125	16,705
<u>Green:</u>						
S2	81,031	16,206	3,241	2,431	8,103	2,431
S3	62,640	12,528	2,506	1,879	6,264	1,879
S4	79,720	15,944	3,189	2,392	7,972	2,392
RA1	30,609	6,122			3,673	2,449
Primitive	227,762					
L1	3,216	1,608			1,126	482
Total	484,978	52,404	8,936	6,702	27,138	9,633
<u>Brown:</u>						
RA3	778,808	77,880	15,576	31,152	23,264	7,788
Wildlife	65,805					
Total	844,613	77,880	15,576	31,152	23,264	7,788
<u>Red:</u>						
Urban	113,900					
Totals by columns	2,144,801	426,763	129,724	108,293	154,527	34,126

## SUTTER COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	60,910	30,455	15,228	9,137	6,091	
R2	2,720	1,088	544	326	218	
R3						
R4						
S1						
RA2						
H1	243	36		29	7	
H2						
R1R						
R2R						
R3R						
R4R						
L2						
Total	63,873	31,579	15,772	9,492	6,316	
<u>Green:</u>						
S2						
S3						
S4						
RA1						
Primitive						
L1						
<u>Brown:</u>						
RA3						
Wildlife	47,250					
<u>Red:</u>						
Urban	22,710					
Totals by columns	133,833	31,579	15,772	9,492	6,316	

Table 2-1

## TEHAMA COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	125,440	62,720	31,360	18,816	12,544	
R2	69,120	27,648	13,824	8,294	5,530	
R3	61,120	18,336	7,334	3,667	6,418	917
R4	36,960	11,088	4,435	2,218	3,881	554
S1						
RA2	625,280	250,112	50,022	50,022	125,056	25,011
H1	409	61		49	12	
H2						
R1R	99,680	49,840	24,920	14,952	9,968	
R2R						
R3R						
R4R						
L2	7,200	4,320	1,728	648	1,512	432
Total	1,025,209	424,125	133,623	98,666	164,921	26,914
<u>Green:</u>						
S2						
S3						
S4						
RA1						
Primitive	131,370					
L1						
Total	131,370					
<u>Brown:</u>						
RA3	466,160	46,616	9,323	18,646	13,985	4,662
Wildlife						
Total	466,160	46,616	9,323	18,646	13,985	4,662
<u>Red:</u>						
Urban	42,270					
Totals by columns	1,665,009	470,741,	142,946	117,312	178,906	31,576

TRINITY COUNTY  
Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organiz- ational Camps
<u>Blue:</u>						
R1	104,960	52,480	26,240	15,744	10,496	
R2	49,920	19,968	9,984	5,991	3,994	
R3	15,600	4,680	1,872	938	1,639	234
R4	16,880	5,064	2,026	1,011	1,773	252
S1	1,920	512	103	77	256	77
RA2	344,040	137,616	27,523	27,523	68,808	13,761
H1						
H2						
R1R	120,000	60,000	30,000	18,000	12,000	
R2R	24,320	9,728	4,864	2,918	1,946	
L2	10,980	6,588	2,635	988	2,306	659
Total	688,620	296,636	105,247	73,190	103,218	14,983
<u>Green:</u>						
S2	36,360	7,272	1,454	1,091	3,636	1,091
S3	7,520	1,506	300	227	752	227
S4	36,700	7,340	1,468	1,101	3,670	1,101
RA1						
Primitive	322,340					
	402,920	16,118	3,222	2,419	8,058	2,419
<u>Brown:</u>						
RA3						
Wildlife						
<u>Red:</u>						
Urban	19,940					
Totals by columns	1,111,480	312,754	108,469	75,609	111,276	17,402

Table 2-n

## YOLO COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Recreation Residences	Commercial Facilities	Camping and Picnic Grounds	Organizational Camps
<u>Blue:</u>						
R1	78,400	39,200	19,600	11,760	7,840	
R2	22,880	9,152	4,576	2,745	1,831	
R3	4,920	1,476	591	295	516	74
R4	1,680	504	201	101	177	25
S1						
RA2	36,960	14,784	2,957	2,957	7,392	1,479
H1	238	36		29	7	
R1R	13,440	6,720	3,360	2,016	1,344	
R2R						
L2						
Total	158,438	72,142	31,285	19,903	19,107	1,578
<u>Green:</u>						
S2						
S3						
S4						
RA1						
Primitive						
<u>Brown:</u>						
RA3	52,970	5,297	1,059	2,119	1,589	530
Wildlife	40,750					
Total	93,720	5,297	1,059	2,119	1,589	530
<u>Red:</u>						
Urban	56,460					
Totals by columns	308,618	77,439	32,344	22,022	20,696	2,108

## YUBA COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Residences	Commercial Facilities	Camping and Picnic Grounds	Camps
<u>Blue:</u>						
R1	56,320	28,160	14,080	8,448	5,632	
R2	20,800	8,320	4,160	2,495	1,665	
R3	960	288	115	58	101	14
R4	640	192	77	38	67	10
S1						
RA2	117,550	47,020	9,405	9,405	23,508	4,702
H1	78	12		10	2	
H2						
R1R	44,320	22,160	11,080	6,645	4,435	
R2R						
L2	640	384	154	58	134	38
Total	241,308	106,536	39,071	27,157	35,544	4,764
<u>Green:</u>						
S2						
S3						
S4						
RA1						
Primitive						
<u>Brown:</u>						
RA3	8,000	800	160	320	240	80
Wildlife	32,420					
Total	40,420	800	160	320	240	80
<u>Red:</u>						
Urban	68,280					
Totals by columns	350,008	107,336	39,231	27,477	35,784	4,844



	Tehama	Trinity	Yolo	Yuba	Total for 15 Counties
772	142,946	108,469	32,344	39,231	1,221,381
772	102,518	88,802	32,342	32,777	863,673
.0	0.72	0.82	1.0	0.84	0.71
772	81,873	78,311	28,328	29,512	689,408
	864	1,317		77	13,217
	19,781	9,174	4,014	3,188	177,749
960	18,453,240	15,984,360	5,821,560	5,899,860	155,461,140
492	117,312	75,609	22,022	27,477	1,024,439
632	7,819	5,038	1,467	1,830	68,279
.07	0.07	0.07	0.07	0.07	0.07
630	3,196	3,139	1,127	1,178	27,424
	43	65		3	656
	4,577	1,834	338	648	40,166
2	3		2	1	33
520	2,814,840	1,813,680	528,120	658,800	24,580,440
316	178,906	111,276	20,696	35,783	1,561,956
518	123,786	104,413	26,409	31,776	1,095,206
.0	0.69	0.94	1.3	0.89	0.70
518	76,682	80,324	23,416	23,792	696,584
	756	1,153		67	11,543
	46,347	22,936	2,993	7,917	6,570
	1				378,719
320	29,708,640	25,059,120	6,338,160	7,626,240	1,780
					5
	31,576	17,402	2,108	4,844	297,934
	777	434	52	119	7,442
	0.02	0.02	0.02	0.02	0.02
	36	74	2		611
		16			149
	741	344	50	119	328
	2,097,900	1,171,800	140,400	321,300	6,298
					56
00	53,074,620	44,028,960	12,828,240	14,506,200	20,093,400
					462,984,420
er	Tehama	Trinity	Yolo	Yuba	Total
	24,920	34,864	3,360	11,080	
	24,920	34,864	3,360	11,080	
	4,485,600	6,275,520	604,800	1,994,400	41,340,060
	14,952	20,918	2,016	6,645	
	997	1,395	134	443	
	358,920	502,200	48,240	159,480	3,303,360
	9,968	13,946	1,344	4,435	
	19,936	27,892	2,688	8,870	
	4,784,640	6,694,080	645,120	2,128,800	44,662,560
-	-	-	-	-	
					21,600
	9,629,160	13,471,800	1,298,160	4,282,680	89,327,580

## YUBA COUNTY

## Acres in Recreation Facilities

Area Classification	Total Area	Developed Area	Residences	Commercial Facilities	Camping and Picnic Grounds	Camps
<u>Blue:</u>						
R1	56,320	28,160	14,080	8,448	5,632	
R2	20,800	8,320	4,160	2,495	1,665	
R3	960	288	115	58	101	14
R4	640	192	77	38	67	10
S1						
RA2	117,550	47,020	9,405	9,405	23,508	4,702
H1	78	12		10	2	
H2						
R1R	44,320	22,160	11,080	6,645	4,435	
R2R						
L2	640	384	154	58	134	38
Total	241,308	106,536	39,071	27,157	35,544	4,764
<u>Green:</u>						
S2						
S3						
S4						
RA1						
Primitive						
<u>Brown:</u>						
RA3	8,000	800	160	320	240	80
Wildlife	32,420					
Total	40,420	800	160	320	240	80
<u>Red:</u>						
Urban	68,280					
Totals by columns	350,008	107,336	39,231	27,477	35,784	4,844

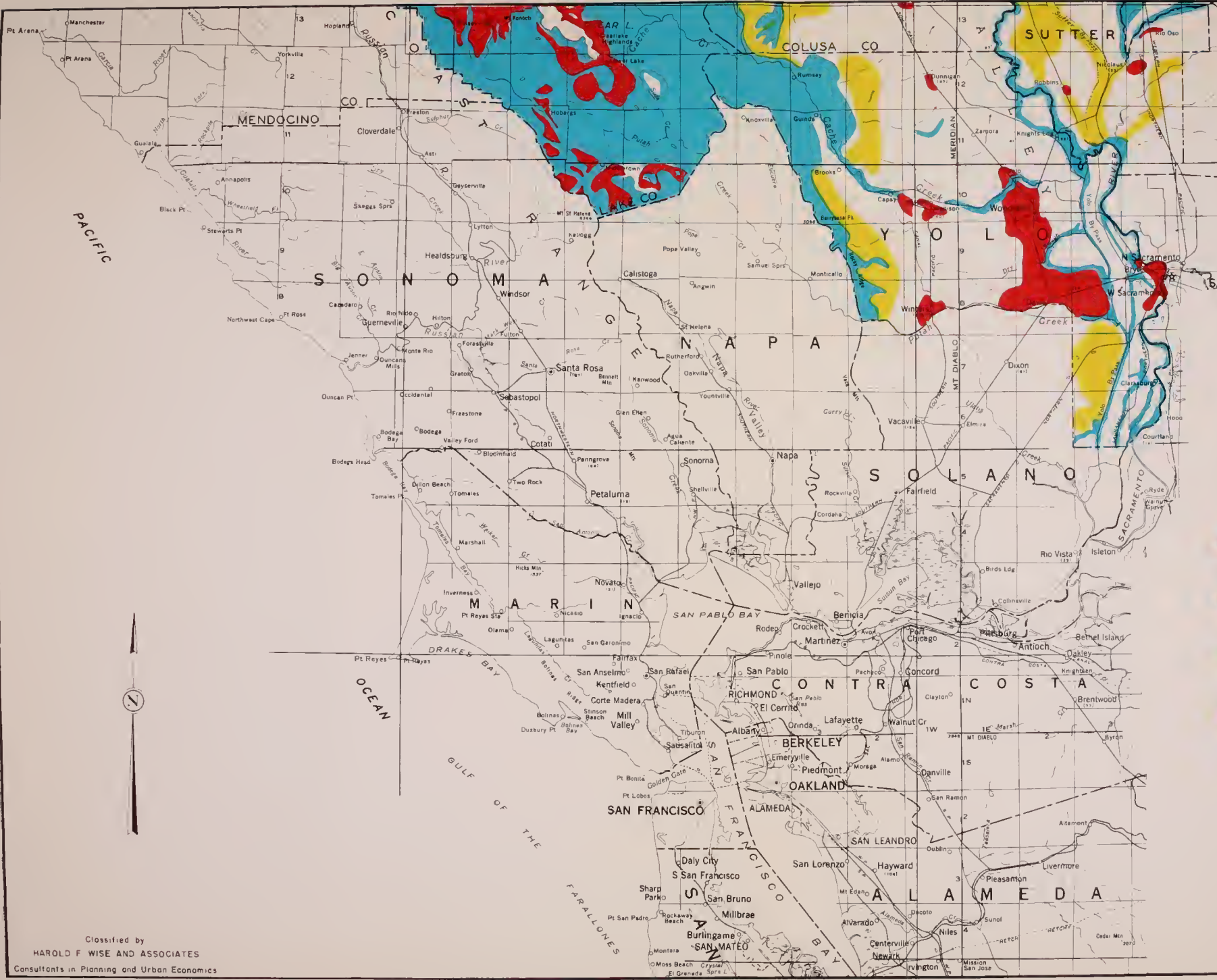
Table 3  
ESTIMATED USER-DAYS PER SEASON AT CAPACITY USE OF  
POTENTIAL RECREATION AREAS IN 15 NORTHEASTERN COUNTIES

Recreation Area	Butte	Colusa	Glenn	Lake	Lassen	Modoc	Plumas	Shasta	Sierra	Siskiyou	Sutter	Tehama	Trinity	Yala	Yuba	Total for 15 Counties
<b>Permanent and Summer Residences</b>																
Total net developable acres	72,756	27,257	26,582	65,103	108,250	96,887	127,191	182,623	46,246	129,724	15,772	142,946	108,469	32,344	39,231	1,221,381
Total units	61,807	21,802	19,977	41,848	59,834	55,605	76,941	128,652	23,320	101,676	15,772	102,518	88,802	32,342	32,777	863,673
Average units per acre	0.85	0.80	0.75	0.64	0.55	0.57	0.60	0.70	0.50	0.78	1.0	0.72	0.82	1.0	0.84	0.71
R&S 1 unit per acre	55,723	19,075	16,650	30,221	34,958	34,043	51,123	116,474	11,158	86,187	15,772	81,873	78,311	28,328	29,512	689,408
L2 1 unit per 2 acres	1,220		51		1,338	1,843	1,787	386	1,401	2,933		864	1,317		77	13,217
RA 2-3 1 unit per 3 acres	4,864	2,727	19,977	11,627	23,538	19,719	24,031	11,792	10,761	12,556		19,781	9,174	4,014	3,188	177,749
Capacity users per season (4 persons @ 45 days = 180)	11,125,260	3,924,360	3,595,860	7,532,640	10,770,120	10,008,900	13,849,380	23,157,360	4,197,600	18,301,680	2,838,960	18,453,240	15,984,360	5,821,560	5,899,860	155,461,140
<b>Commercial: Resorts, Hotels, etc.</b>																
Total net developable acres	48,709	21,473	20,254	52,918	122,530	108,933	105,062	144,361	39,994	108,293	9,492	117,312	75,609	22,022	27,477	1,024,439
Total units	3,246	1,430	1,348	3,533	8,162	7,261	7,003	9,622	2,671	7,217	632	7,819	5,038	1,467	1,830	68,279
Average units per acre	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
R&S 1 unit per 15 acres	2,211	768	691	1,202	1,354	1,319	2,051	4,597	443	3,518	630	3,196	3,139	1,127	1,178	27,424
L2 1 unit per 15 acres	61		1		67	92	89	19	70	146		43	65		3	656
RA 2-3 1 unit per 15 acres	972	660	655	2,325	6,741	5,844	4,863	5,002	2,158	3,549		4,577	1,834	338	648	40,166
Highways 1 unit per 15 acres	2	2	1		6	6		4		4	2	3		2	1	33
Capacity users per season (4 persons @ 90 days = 360)	1,168,560	514,800	485,280	1,271,880	2,938,320	2,613,960	2,521,080	3,463,920	961,560	2,598,120	227,520	2,814,840	1,813,680	528,120	658,800	24,580,440
<b>Camping: Picnic Areas, etc.</b>																
Total net developable acres	62,182	29,232	36,561	99,801	167,495	139,394	221,448	210,532	87,807	154,527	6,316	178,906	111,276	20,696	35,783	1,561,956
Total units	50,618	27,049	32,020	54,258	84,775	74,743	110,201	162,635	37,412	162,493	12,618	123,786	104,413	26,409	31,776	1,095,206
Average units per acre	0.81	0.93	0.88	0.54	0.51	0.54	0.50	0.77	0.43	1.1	2.0	0.69	0.94	1.3	0.89	0.70
R&S 2 units per acre	47,118	20,770	23,784	25,190	34,292	33,298	43,038	110,820	9,282	132,160	12,618	76,682	80,324	23,416	23,792	696,584
L2 1 unit per 2 acres	1,068		45		1,147	1,613	1,563	338	1,226	2,567		756	1,153		67	11,543
RA 1 1 unit per 3 acres							5,346			1,224						6,570
RA 2-3 1 unit per 3 acres	2,432	6,242	8,191	29,068	48,680	39,794	59,792	51,257	26,904	26,166		46,347	22,936	2,993	7,917	378,719
L1 1 unit per 3 acres		37			655	37	462	219		375						1,780
Highways 1 unit per 15 acres					1	1		1		1		1				5
Capacity users per season (4 persons @ 60 days = 240)	12,148,320	6,491,760	7,684,800	13,021,920	20,346,000	17,938,320	26,448,240	39,032,400	8,978,880	38,998,320	3,028,320	29,708,640	25,059,120	6,338,160	7,626,240	262,849,440
<b>Organizational Camps, etc.</b>																
Total net developable acres	8,241	5,085	6,808	17,584	37,646	31,347	48,481	35,796	16,890	34,126		31,576	17,402	2,108	4,844	297,934
Total units	205	126	168	439	939	790	1,215	906	421	851		777	434	52	119	7,442
Average units per acre	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.02		0.02	0.02	0.02	0.02	0.02
R&S 1 unit per 40 acres	8	23	46	3	20	37	11	78	1	272		36	74	2		611
L2 1 unit per 40 acres	15				16	23	22	4	17	36		16				149
RA 1 1 unit per 40 acres							267			61						328
RA 2-3 1 unit per 40 acres	182	102	122	436	882	729	901	817	403	470		741	344	50	119	6,298
L1 1 unit per 40 acres		1			21	1	14	7		12						56
Capacity users per season (30 persons @ 90 days = 2,700)	553,500	340,200	453,600	1,185,300	2,535,300	2,133,000	3,280,500	2,446,200	1,136,700	2,297,700		2,097,900	1,171,800	140,400	321,300	20,093,400
<b>Total user-days</b>	<b>24,995,640</b>	<b>11,271,120</b>	<b>12,219,540</b>	<b>23,011,740</b>	<b>36,589,740</b>	<b>32,694,180</b>	<b>46,099,200</b>	<b>68,099,880</b>	<b>15,274,740</b>	<b>62,195,820</b>	<b>6,094,800</b>	<b>53,074,620</b>	<b>44,028,960</b>	<b>12,828,240</b>	<b>14,506,200</b>	<b>462,984,420</b>

Table 4  
ESTIMATED ANNUAL USER-DAYS AT RESERVOIR FACILITIES AT CAPACITY USE

Type of Facility	Butte	Colusa	Glenn	Lake	Lassen	Modoc	Plumas	Shasta	Sierra	Siskiyou	Sutter	Tehama	Trinity	Yala	Yuba	Total
<b>Recreation residences</b>																
Developable acres	16,505	3,840	6,040	2,819	11,413	9,169	17,000	54,017	3,200	31,440	-	24,920	34,864	3,360	11,080	
Units @ 1 per acre	16,505	3,840	6,040	2,819	11,413	9,169	17,000	54,017	3,200	31,440	-	24,920	34,864	3,360	11,080	
User-days @ 180/unit	2,970,900	691,200	1,087,200	507,420	2,054,340	1,650,420	3,060,000	9,723,060	576,000	5,659,200	-	4,485,600	6,275,520	604,800	1,994,400	41,340,060
<b>Commercial: resorts, hotels, etc.</b>																
Developable acres	9,904	2,304	3,624	1,691	6,757	5,345	10,200	32,410	1,920	18,864	-	14,952	20,918	2,016	6,645	
Units @ 1 per 15 acres	660	154	242	113	450	356	680	2,166	128	1,258	-	997	1,395	134	443	
User-days @ 360/unit	237,600	55,440	87,120	40,680	162,000	128,160	244,800	779,760	46,080	452,880	-	358,920	502,200	48,240	159,480	3,303,360
<b>Campgrounds, picnic areas</b>																
Developable acres	6,603	1,536	2,416	1,128	4,994	4,414	6,800	21,607	1,280	12,576	-	9,968	13,946	1,344	4,435	
Units @ 2 per acre	13,206	3,072	4,832	2,256	9,988	8,828	13,600	43,214	2,560	25,152	-	19,936	27,892	2,688	8,870	
User-days @ 240/unit	3,169,440	737,280	1,159,680	541,440	2,397,120	2,118,720	3,264,000	10,371,360	614,400	6,036,480	-	4,784,640	6,694,080	645,120	2,128,800	44,662,560
<b>Organizational camps</b>																
Developable acres	-	-	-	-	113	196	-	-	-	-	-	-	-	-	-	
Units @ 1 per 40 acres	-	-	-	-	3	5	-	-	-	-	-	-	-	-	-	
User-days @ 2700/unit	-	-	-	-	8,100	13,500	-	-	-	-	-	-	-	-	-	21,600
<b>Total</b>	<b>6,377,940</b>	<b>1,483,920</b>	<b>2,334,000</b>	<b>1,089,540</b>	<b>4,621,560</b>	<b>3,910,800</b>	<b>6,568,800</b>	<b>20,874,180</b>	<b>1,236,480</b>	<b>12,148,560</b>		<b>9,629,160</b>	<b>13,471,800</b>	<b>1,298,160</b>	<b>4,282,680</b>	<b>89,327,580</b>

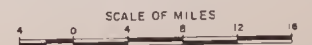




- LEGEND**
- URBAN AND SUBURBAN:** URBAN CENTERS, LANDS ADJACENT TO PRESENT URBAN CENTERS, AND AREAS LIKELY TO BECOME URBAN AND SUBURBAN IN CHARACTER. NO POPULATION DENSITY IS SPECIFIED AND IN SOME CASES WOULD INCLUDE WIDELY SCATTERED RESIDENCES.
  - HIGH INTENSITY RECREATION:** AREAS OF PRIME RECREATION POTENTIAL THAT ARE ACCESSIBLE BY MOTOR VEHICLE DURING THE ENTIRE VACATION SEASON. MOST AREAS SUBJECT TO DEVELOPMENT FOR COMMERCIAL RESORTS, PRIVATE SUMMER HOMES, PRIVATE AND PUBLIC CAMPING AND PICNIC GROUNDS WOULD BE IN THIS CLASSIFICATION.
  - MEDIUM INTENSITY RECREATION:** AREAS OF PRIME RECREATION POTENTIAL NOT READILY ACCESSIBLE BY MOTOR VEHICLE. THIS INCLUDES PRIMITIVE AREAS BUT WOULD ALSO INCLUDE SOME AREAS ACCESSIBLE BY JEEP. TO A LIMITED EXTENT THIS AREA WOULD BE DEVELOPED FOR RESORTS, SUMMER HOMES AND CAMP GROUNDS.
  - LOW INTENSITY RECREATION AREAS:** ACCESSIBLE AREAS HAVING LIMITED RECREATION POTENTIAL SUCH AS THE WIDE JUNIPER-SAGE PLATEAU OF THE LAHONTAN BASIN, THE DRY RANGES OF THE EASTERN CASCADE SLOPE, AND THE MIDDLE ALTITUDE MESQUITE AND MANZANITA FOREST. WILDLIFE AREAS ARE INCLUDED HEREIN. PRIMARY RECREATION USE WOULD BE FOR HUNTING AND FISHING.

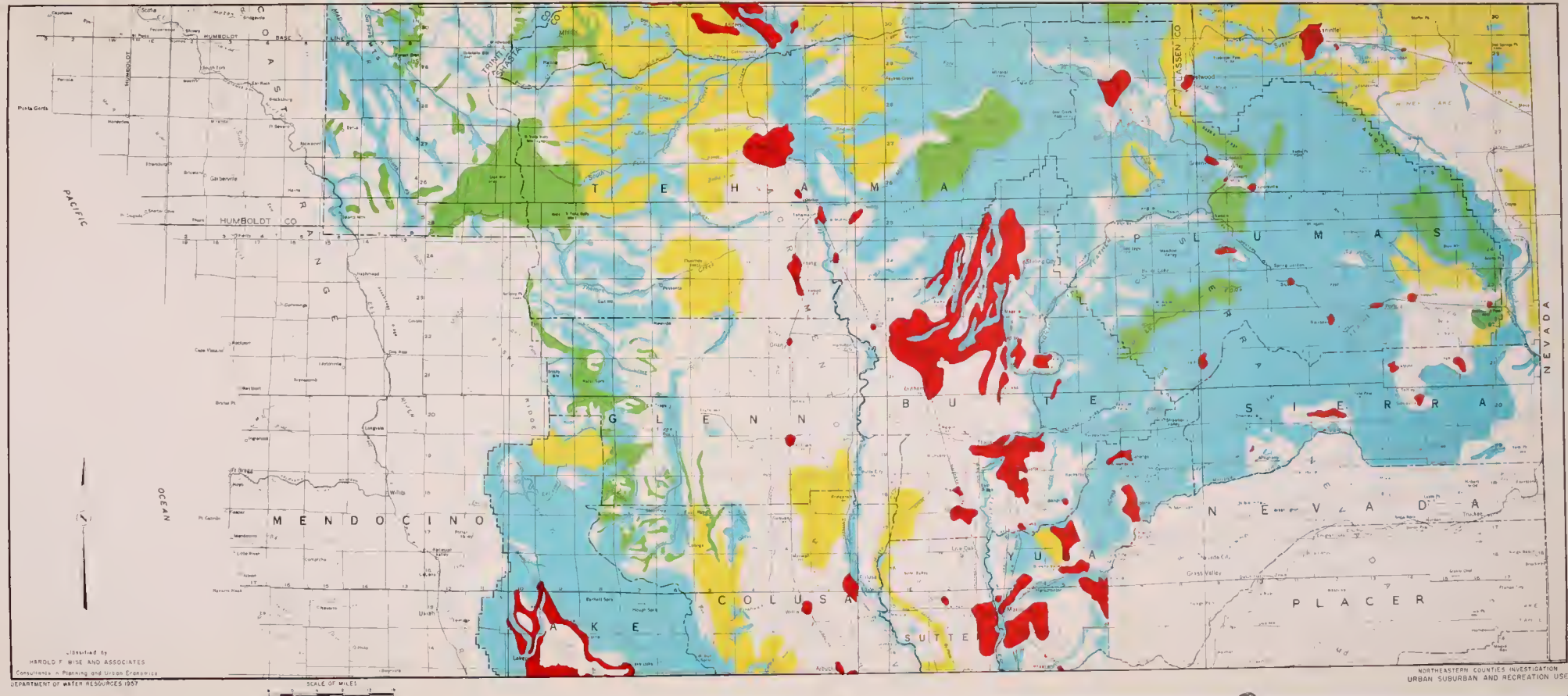
STATE OF CALIFORNIA  
DEPARTMENT OF WATER RESOURCES  
DIVISION OF RESOURCES PLANNING  
NORTHEASTERN COUNTIES INVESTIGATION

**CLASSIFICATION OF LANDS FOR  
URBAN, SUBURBAN, AND RECREATION USE  
1957**





- LEGEND
- URBAN AND SUBURBAN URBAN CENTERS LANDS ADJACENT TO PRESENT URBAN CENTERS AND AREAS LIKELY TO BECOME URBAN AND SUBURBAN IN CHARACTER AND POPULATION DENSITY SPECIFIED AND IN SOME CASES WOULD INCLUDE BODILY SCATTERED RESIDENCE
  - HIGH INTENSITY RECREATION AREAS OF PRIME RECREATION POTENTIAL THAT ARE ACCESSIBLE BY MOTOR VEHICLE DURING THE ENTIRE YEAR IN SEASON MOST AREAS SUITABLE TO DEVELOPMENT FOR COMMERCIAL RESORTS PRIVATE SUMMER HOMES PRIVATE AND PUBLIC CAMPING AND PICNIC GROUNDS WOULD BE IN THIS CLASSIFICATION
  - MEDIUM INTENSITY RECREATION AREAS OF PRIME RECREATION POTENTIAL NOT READILY ACCESSIBLE BY MOTOR VEHICLE THIS INCLUDES PRIMITIVE AREAS BUT WOULD ALSO INCLUDE SOME AREAS ACCESSIBLE BY FOOT TO A LIMITED EXTENT THIS AREA WOULD BE DEVELOPED FOR RESORTS SUMMER HOMES AND CAMP GROUNDS
  - LOW INTENSITY RECREATION AREAS ACCESSIBLE AREAS HAVING LIMITED RECREATION POTENTIAL SUCH AS THE WIDE JUNIPER-GRASS PLATEAUS OF THE LANDWATER BASIN THE DRY RANGES OF THE EASTERN CASCADE SLOPE AND THE MIDDLE ALTITUDE MOUNTAIN AND MOUNTAIN FOREST WILDLIFE AREAS ARE INCLUDED HEREIN PRIMITIVE RECREATION USE WOULD BE FOR HUNTING AND FISHING



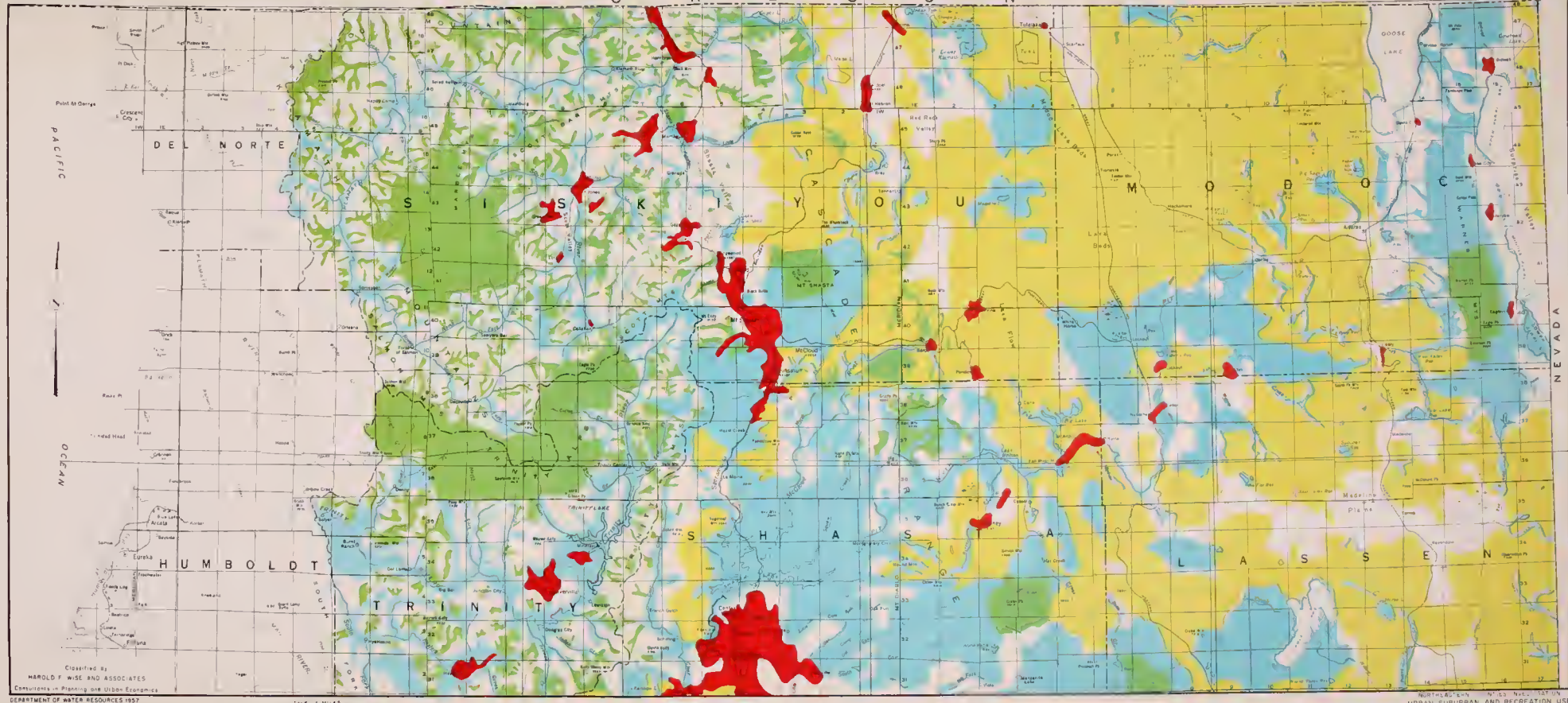
Classified by  
HAROLD F. WISE AND ASSOCIATES  
Consultants in Planning and Urban Engineering  
DEPARTMENT OF WATER RESOURCES 1957





LEGEND

- URBAN AND SUBURBAN URBAN CENTERS, LANDS ADJACENT TO PRESENT URBAN CENTERS, AND AREAS LIKELY TO BECOME URBAN AND SUBURBAN IN CHARACTER AND POPULATION DENSITY IS SPECIFIED AND IN SOME CASES WOULD INCLUDE HIGHLY SCATTERED RESIDENCES
- HIGH INTENSITY RECREATION AREAS OF PRIME RECREATION POTENTIAL THAT ARE ACCESSIBLE BY MOTOR VEHICLE DURING THE ENTIRE YEAR. MOST AREAS SUBJECT TO DEVELOPMENT FOR COMMERCIAL RESORTS, PRIVATE SUMMER HOMES, PRIVATE AND PUBLIC CAMPING AND PISCINE GROUNDS WOULD BE IN THIS CLASSIFICATION
- MEDIUM INTENSITY RECREATION AREAS OF PRIME RECREATION POTENTIAL, NOT READILY ACCESSIBLE BY MOTOR VEHICLE. THIS INCLUDES PRIMITIVE AREAS BUT WOULD ALSO INCLUDE SOME AREAS ACCESSIBLE BY JEEP TO A LIMITED EXTENT. THIS AREA WOULD BE DEVELOPED FOR RESORTS, SUMMER HOMES AND CAMP GROUNDS
- LOW INTENSITY RECREATION AREAS ACCESSIBLE AREAS HAVING LIMITED RECREATION POTENTIAL SUCH AS THE WIDE JUNIPER-BASE PLATEAU OF THE LAMONTAIN BASIN, THE OXYRANGES OF THE EASTERN CASCADE MOUNTAINS, AND THE MIDDLE ALTITUDE MESQUITE AND MANHATTAN FOREST. A LITTLE AREAS ARE INCLUDED HEREIN. PRIMARY RECREATION USE WOULD BE FOR HUNTING AND FISHING



Classified by  
HAROLD F. WISE AND ASSOCIATES  
Consultants in Planning and Urban Economics  
DEPARTMENT OF WATER RESOURCES 1957









